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Public Reporting of Cost Measures in Health

An environmental scan of current practices and assessment of consumer centeredness

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Agency for Healthcare Research and Quality
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540 Gaither Road
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www.ahrq.gov

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Prepared by:

Investigators:

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Acknowledgments

Preface

The Agency for Healthcare Research and Quality (AHRQ) conducts the Effective Health Care Program as part of its mission to produce evidence that is easily understood and used for better decision-making about healthcare. As part of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, Congress directed AHRQ to conduct and support research on the comparative outcomes, clinical effectiveness, and appropriateness of pharmaceuticals, devices, and healthcare services to meet the needs of Medicare, Medicaid, and the State Children's Health Insurance Program (SCHIP).

AHRQ has an established network of Evidence-based Practice Centers (EPCs) that produce Evidence Reports/Technology Assessments and Comparative Effectiveness Reviews to assist public- and private-sector organizations in their efforts to improve the quality of health care. Technical Briefs are the most recent addition to this body of knowledge.

A Technical Brief provides an overview of key issues related to a clinical intervention or health care service—for example, current indications for the intervention, relevant patient population and subgroups of interest, outcomes measured, and contextual factors that may affect decisions regarding the intervention. Technical Briefs generally focus on interventions for which there are limited published data and too few completed protocol-driven studies to support definitive conclusions. The emphasis, therefore, is on providing an early objective description of the state of science, a potential framework for assessing the applications and implications of the new interventions, a summary of ongoing research, and information on future research needs. Transparency and stakeholder input are essential to the Effective Health Care Program. Please visit the Web site (www.effectivehealthcare.ahrq.gov) to see draft research questions and reports or to join an e-mail list to learn about new program products and opportunities for input. Comparative Effectiveness Reviews will be updated regularly, while Technical Briefs will serve to inform new research development efforts.

Richard G. Kronick, Ph.D.
Director
Agency for Healthcare Research and Quality

Yen-pin Chiang, Ph.D.
Acting Director
Center for Outcomes and Evidence
Agency for Healthcare Research and Quality

Stephanie Chang, M.D., M.P.H.
Director
Evidence-Based Practice Center Program
Agency for Healthcare Research and Quality

Monique D. Cohen, Ph.D., M.P.H.
Task Order Officer
Evidence-Based Practice Center Program
Agency for Healthcare Research and Quality

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Abstract

Background: Public reporting of the cost and quality of health care providers and facilities aims to empower consumers to make informed decisions and, as such, improve the efficiency of the health care system. While the public reporting of quality is well documented, less is known about what measures are used to report costs and the degree to which such reporting is consumer centered.

Purpose: We sought to document current practices for the public reporting of cost measures and to assess if current practices are consumer centered.

Methods: Guided by discussions with key informants and a targeted literature review, data were drawn from an environmental scan of current public-reporting websites in December 2013. Using a systematic approach, we identified websites reporting cost measures, cataloged the different measures used, and assessed the degree to which the public reporting of cost measures was consumer centered by developing and applying a novel taxonomy (PRICE) comprised of five domains: 1) Price transparency; 2) Real comparisons; 3) Information on value; 4) Connect to care; and 5) Ease of use. Each of these domains was assessed across three items, which were summed to make an overall scale ranging from 0 to15.

Findings: A total of 372 websites was identified, of which 102 were duplicates and 211 were excluded after two stages of review. Of the 59 websites reporting costs at the provider or facility level, most were operated by state departments of health or state hospital association (75%), all reported on inpatient care and 71% reported average charges. Only a minority of websites reported costs using symbols/figures (7%), reported out-of-pocket costs (2%), or reported current-year (i.e. 2013) data (14%). The median PRICE score of consumer centeredness was 8, with a range of 4-11. When comparing the sub-domains, ease of use scored highest on average (2.6) and information on value scored lowest (0.7).

Conclusions: Several factors limit the use of the current publicly-reported cost measures: heterogeneity in data sources, lack of actionable measures, inappropriate comparisons, not incorporating cost and quality data, a lack of awareness of this data among consumers and inability for consumer feedback. More research is needed to determine the impact of publicly-reported cost data on consumers and best practices need to be documented for institutions and associations that collect and disseminate cost data.

Background

Public reporting of the cost and quality of health care providers and facilities aims to empower consumers to make informed decisions. If consumers make informed health care decisions, it is believed that improvements in the efficiency of the health care system can be achieved. Much has been written about the public reporting of quality measures over the last decade, but much less is known about measures used to publicly report costs. Furthermore, it is unclear if current practices of publicly reporting costs are consumer centered. This report aims to inform both research and practice by documenting current practices for the public reporting of cost measures and assessing if current practices are consumer centered.

Public reporting

The Institute of Medicine's (IOM) Crossing the Quality Chasm report (IOM Report, 2001) shaped American health care policy reform in the 21st century. The IOM challenged the US health care system to become increasingly safe, timely, efficient, effective, equitable, and patient-centered in order to improve quality. Many of the strategies described in the IOM report involved creating a transparent health care system to inform consumers and empower them to make better decisions. This work had a major impact on both research and practice and it is now commonly accepted that patients need to be empowered to make better decisions in health care. Patient-centered care and enhanced patient decision making are at the core of health care reform, but the best path to achieve these goals is uncertain. Can we get information to patients to help them to choose the best-quality, high-value health care? Is the information presently available patient centered? Does information lead to better decisions and better outcomes?

One approach to the dissemination of information has been public reporting. Public reporting refers to the provision of information related to health care so that members of the public can access it with nominal cost and no more than reasonable difficulty. Such information can include data on cost, outcomes, processes, procedures, medications, or even conflicts of interest, and can come from physicians, hospitals, clinics, payors, or other health care organizations. The first public reporting of health care information came more than twenty years ago by the agency that administered Medicare (Epstein, 1995). The first use of the term public reporting to refer to health care delivery improvement was in 1992 (Malcom, 1992). The use of the term was derived from fields in which errors must be communicated to the public such as in environmental regulation. While the first attempt at public reporting in health care did not survive due in part to public opposition, it began a process that continues today.

These first pioneering efforts by state and federal agencies led to other efforts by a mix of non-profit organizations including the National Center for Quality Assurance, whose widely-used Healthcare Effectiveness Data and Information Set (HEDIS) measures were first released in 1998, as well as for-profit organizations, like the Leapfrog Group. Such first steps in public reporting were founded on two assumed benefits. First, that public reporting would make health care providers and institutions accountable to the choices of actors in the free market where better performance would thus be rewarded. Secondly, the awareness that consumers would be acting on such information would provide an incentive for health care providers and payors to improve the quality of their health care delivery.

Since the start of public reporting, hospital- and plan-based measures have predominated, with relatively little attention paid to public reporting about providers (Marshall et al., 2000). There is renewed interest in public reporting, especially among providers, since the federal introduction of Physician Compare – a program to allow consumers to compare physicians and

other health care professionals engaged with the Medicare program. However, few data are available on the use of public reporting by individuals choosing primary care providers.

Variation in health care utilization, both geographically and otherwise, is a common basis for public reporting. Additionally, public reporting may motivate providers to pursue quality improvement and improve their care delivery, public image, and market share. However, the most common reason in favor of public reporting is to allow patients to choose the best health care. Ideally, public reporting sets in motion a virtuous cycle by which patients identify the most suitable health care services and providers for their needs, and providers modify their practice to conform to the needs of health care consumers. Thus, public reporting can help realign the U.S. health care system by removing gaps between patient needs and the actions of health care providers and payors. However, one can also imagine (by analogy with other markets) ways in which publicly-reported data on providers and facilities might encourage decisions that are not in the best of interest of consumers or of their health care. These might include the tendencies to privilege prestige or an unfounded good reputation, crowdsourcing without empirical basis, and unreported conflicts of interest.

The evidence about the effect of public reporting on health care has been mixed. Fung et al., (2008) concluded that public reporting stimulates quality improvement, but that evidence is lacking about its impact on process or outcome measures. Similarly, Ketelaar et al, (2011) found insufficient evidence to judge whether public reporting changes the behavior of patients, providers, or organizations. Berger and colleagues (2013) reviewed the literature on the relationship of public reporting to patient-related outcomes. There is limited evidence supporting that public reporting has a favorable effect on outcomes, particularly in nursing homes. The authors found little evidence supporting claims that public reporting has an impact on disparities, or outcomes measured in the outpatient setting (Berger et al., 2013). Additionally one article found that public reporting might have unintended negative consequences on health care disparities (Karmarkar et at., 2014).

The public reporting field became richer in 2006 when U.S. President George W. Bush issued an executive order mandating price transparency in health care (Federal Register, 2006). Various federal, state, and private approaches have tackled priced transparency. The Leapfrog organization has included measures that are sensitive to cost. CMS has implemented measures on health care efficiency, based in part on recommendations by the National Quality Forum. There are multiple state and private sector programs evaluating health care efficiency. Although efficiency – encouraging higher value for money – is not the only interpretation of price transparency, it was the most prevalent interpretation in the early years following this presidential order. Thus, efficiency has served as a useful common ground for establishing agreed-upon terminologies and definitions as public reporting of costs becomes widespread (Krumholz et al., 2008).

Cost measures

Little is known about the practice of public reporting of costs today. It is unknown as to what entities are publicly disseminating information on health care costs, what information is being presented, and how it is tailored to the users. The circumstance in which an individual makes use of such cost information is unclear as is where individuals obtain such information. Do consumers use it to supplement materials from other sources, or as their sole source of information? How does such information affect their decision-making, if at all? Finally, does public reporting of health-care costs impact health-care outcomes, whether patient-related

outcomes/costs or health services related outcomes/costs? While the work of Hibbard and colleagues (2012) has solidified understanding of the ways in which public reporting can help patients make choices under experimental conditions, less is known about how public reporting affects patient choice in the real world.

If public reporting is to meaningfully change health outcomes, we expect that it should be consumer centered in order for consumers to best use the presented information. For patients to act as effective health care consumers, they need data and information that empower them and aid their decision making about the purchase of health care services (Keselman et al., 2008). Public reports should encourage patients to be active health care consumers and make decisions based on data.

We propose that consumer centered can be defined as *having respect for, and being responsive to, the preferences, needs and values of patients and consumers* (ACSQHC, 2014). This definition implies that consumer-centered approaches are designed to specifically meet the preferences, needs, and values of consumers. As an example, if consumers need specific data to make a purchasing decision, then the data being shared with them for this purpose (need) are considered to be consumer centered.

The development of consumer centered strategies for sharing data and information requires two elements: (1) sharing data and information that are useful to consumers; and (2) effectively using strategies to communicate those data (Keselman et al., 2008). Data and information need to be presented in a way that encourages and supports participation in decision making by patients, consumers, and their caregivers (ACSQHC, 2014). To date, public reports have been disconnected from consumer decisions about providers because of weaknesses in report card content, design, and accessibility. There are, however, opportunities to improve public reports. Specifically, those who create public reports have the chance to take advantage of advances in measurement, data collection, and information technology to create more consumer-centered public reports (Sinaiko et al., 2012).

Objective

This project was commissioned by AHRQ as a *Technical Brief* as it aimed to provide a snapshot of current practices of the public reporting of cost measures in health care and to assess the extent to which they are consumer centered. The focus of this project was a broadly defined phenomenon (i.e. public reporting practices), rather than a specific health care intervention. By conducting an environmental scan of publicly reported cost measures available to consumers, this report informs researchers and policymakers about the types of measures that might effectively guide consumers in making decisions about their health care.

The scope of this review was limited to publicly reported measures of costs for health care providers and facilities (including clinics, hospitals, skilled nursing facilities, home health care providers, and nursing homes) in the U.S., and thus excluded public reporting on products (e.g. pharmaceuticals and medical devices/aids), health care insurance plans, and foreign practices. The definitions for public reporting of cost data, consumer and cost measure are described in Box 1.

Box 1: Key definitions used in guiding our review

Public reporting of cost data: Data on health care costs of providers or facilities that are publicly available to a broad audience of consumers (either free of charge, at a nominal cost, or granted based on group affiliation) that allow for comparisons within a defined geographic area.

Consumer: Any actual or potential recipient of health care services and their families or advocates who act on their behalf.

Cost measure: A financial measure of cost, charge, reimbursement, payment, or out-of-pocket expenses associated with a visit to a health care provider or facility.

This report is not intended to be a critique of current practices, nor did we aim to directly document which cost measure should be used, what procedures should be reported on or exactly how providers should be compared. Rather, we aimed to document current practices and to identify ways in which the public reporting of cost measures could become more consumer centered. We hope this information may help inform both research and practice in a way that could help benefit consumers and create efficiencies in the health care system.

Guiding Questions

In collaboration with AHRQ, three broad guiding questions (GQs) were developed. As seen in Box 2, additional sub-questions were used to help define the scope of each of the GQs. Over the course of examining these questions, we refined our approaches as more was learned about the current public-reporting practices and knowledge contained in the literature on public reporting. Discussions with AHRQ and with key informants also guided the execution of this study.

GQ 1 was focused on identifying current practices for the public reporting of costs and the type of measures that are currently being used in public-reporting websites. Here we aimed to identify who produced these reports and on what websites they were available; the types of services for which costs were being reported and at what level they were being reported; how cost data were being reported (e.g., dollar amounts, symbols, graphs); and how costs were being compared across providers and facilities.

GQ 2 was targeted at assessing whether the practices for public reporting of costs that we identified were executed in a consumer-centered way. While we identified a few factors to assess consumer centeredness in out protocol (e.g. instruction, relevance, presentation), we realized a more comprehensive approach was needed to assess consumer centeredness. We developed a novel taxonomy (PRICE) to evaluate consumer centeredness. In addition, we assessed if the availability of data in the literature and on the public reporting websites to indicate if consumers were using the cost data as intended in their decision making (i.e. used it to avoid additional cost, for a given level of quality).

Box 2: Guiding questions (GQ) for the study

GQ 1: **What measures of costs about health care providers and facilities have been publicly reported?**

a. Who produces these reports and where are they available?
b. For what services are costs reported?
c. At what level are these data aggregated (e.g. provider, facility)?
d. How are the cost data reported (e.g., dollar amounts, symbols, graphs)?
e. How are the costs of providers/facilities compared (e.g., how many facilities, regional versus national comparisons)?

GQ 2: Are the measures of costs that are being reported consumer centered?

a. How are consumers instructed to use the data?
b. What techniques are used to guide consumers to interpret the data appropriately?
c. Is there evidence that the data is used by consumers?
d. Is the data relevant to consumers making health care decisions?
e. Is the data easily accessible and presented in a consumer-friendly way?

GQ 3: What are the intended and unintended consequences of consumers' use of public-reported cost data?

a. Do consumers find the public reporting of cost measures relevant and are consumers satisfied with the experience?
b. Does the public reporting of cost measures impact (or have the potential to impact) consumers' decisions or behaviors?
c. What are the potential unintended consequences of public reporting of cost measures?
d. Are there key research gaps and needs for future research?

GQ 3, which we answered via our targeted literature review, assessed the intended and unintended consequences of consumers' use of public-reported cost data. Specifically, we identified evidence as to whether consumers find the public reporting of cost measures relevant and whether consumers are satisfied with their experiences comparing costs on public-reporting websites; whether the use of cost data on public-reporting websites had an impact on (or has the potential to impact) consumers' decisions or behaviors; and whether any real or potential unintended consequences of cost data were identified in the literature. We also aimed to assess any key evidence gaps in the literature and to assess current needs for future research on the topic of publicly reporting cost data.

Given a paucity of research examining the degree of consumer centeredness of publicly reported costs measures and the potential impact it has on consumers, some flexibility was needed in executing the GQs. For GQ 2, we realized that our sub-questions were not comprehensive enough and decided to develop a broader taxonomy of factors to assess consumer centeredness. For GQ 3, our key informants recommended we juxtapose public-reporting websites to for-profit, semi-public websites to illustrate gaps in current approaches. The deviations were made in consultation with AHRQ.

Methods

The primary data for this study were abstracted in December 2013 from public-reporting websites that report cost measures. These sites were identified by engaging key informants and via a targeted literature review. The key informants and targeted literature review were also used to develop our taxonomy, PRICE, to assess consumer centeredness and to answer GQ 3. A full study protocol was approved by AHRQ and is publicly available online (Research Protocol, 2014. Available at: http://effectivehealthcare.ahrq.gov/index.cfm/search-for-guides-reviews-and-reports/?productid=1838&pageaction=displayproduct). The methods and results of the targeted literature review are reported in Appendix A.

Engagement

Consistent with standard EPC practices, the writing of this report was guided by engagement with stakeholders at AHRQ and other key informants. The report was also subject to peer review and was made available for public comment. Discussions with key informants were used to provide insight on public reporting websites, to identify cost measures, and to refine our definition of consumer centeredness. Where possible, viewpoints expressed by key informants were crosschecked against available literature and other sources. Key informants disclosed financial conflicts of interest greater than $10,000 and any other relevant business or professional conflicts of interest. The Task Order Officer and the EPC worked to balance, manage, or mitigate potential conflicts of interest identified.

Box 3: Agenda for key informant discussions

Call 1: December 2013	**Call 2: January 2014**
1. Introductions and overview of the project	1. Update on targeted literature review and abstraction
2. Review of the definitions	2. Review of public reporting and abstracting instrument
3. Identifying practices for the public reporting of cost data	3. Review of taxonomy for consumer-centered cost reporting
4. Identifying relevant literature	4. Review of list of semi-public sources
5. Methods for assessing consumer centeredness	

We engaged our key informants twice by phone. Box 3 details the agenda of each of the two calls held with key informants. On the first call we gave an overview of the project and shared our working definitions. We also invited the key informants to share their knowledge of relevant literature and public reporting websites and discussed tools available to measure consumer centeredness of public reporting websites. On the second call we updated the key informants on the project's status and reviewed our data abstraction instrument, taxonomy for consumer centeredness, and semi-public websites.

Peer reviewers were invited to provide written comments on a draft report based on their experience in research and practice. The peer reviewers' comments on the draft report will be considered by the EPC in preparation of the final report. Peer reviewers do not participate in writing or editing of the final report or other products. The synthesis of the scientific literature presented in the final report does not necessarily represent the views of individual reviewers. The dispositions of the peer reviewer comments are documented and will be published three months after the publication of the report. AHRQ posted the draft report on its website for 4 weeks to elicit public comment.

GQ 1: What measures of costs about healthcare providers and facilities have been publicly reported?

We reviewed public reporting websites designed for comparisons of providers and facilities within a geographic area, rather than individual instances of providers and facilities reporting their own costs (with or without presenting a benchmark). As this project did not engage in primary data collection, but rather used evidence synthesis techniques, we needed to identify a set of candidate public reporting websites from publicly available sources. These sources were determined through discussions with AHRQ and key informants and through our targeted literature review.

Analysis of public reporting websites was conducted in three phases. Paralleling what would be done for a literature review, these stages were similar to a title/abstract screen phase (where all sites were reviewed initially), full article screen phase (where a detailed review of the content of the sites was conducted), and data abstraction phase (where the content of sites was reviewed based on a predetermined criteria) (Box 4). Excel was used to manage the data from our environmental scan, including the links to the websites, during both the screening and data abstraction process.

In the first phase of screening, two independent reviewers screened the websites for inclusion. A website was included if there were any indicators of a cost assigned to health care provision or any measure of resource utilization. If both reviewers agreed that a website met one or more of the exclusion criteria, it was excluded (Box 4). Conflicts between the reviewers were resolved by consensus. One investigator (JB) made the final decision on any persisting disagreements between the independent reviewers. During this initial review, emphasis was placed on financial measures of costs (i.e., measures involving dollar signs) and/or the graphical or pictorial representation of such data. However, the review also initially included measures of resource utilization when the reviewer thought that such data was acting as a proxy measure for costs.

Box 4: Inclusion and exclusion criteria for websites review

Stage of review	Inclusions	Exclusions
First-phase screening	✓ Any measure of cost of health care delivery ✓ Measures of utilization (readmission rates, length of stay)	• No measure of any kind of cost • Only shows potential costs for purchasing health insurance plans
Second-phase screening	✓ Cost measures met the following definition: A financial measure of cost, charge, reimbursement, payment or out-of-pocket expenses associated with a visit to a health care provider or facility ✓ Data on health care costs of providers or facilities allowing for comparisons within a defined geographic area	• Only quality measures provided • Not available to the public (requires a Login or membership)

During the second phase of screening, two independent reviewers (YC and TK) screened the websites for inclusion using the explicit definitions of the following terms: "public reporting of cost data," "consumer," and "cost measure". Here we tightened our definition of "cost measure" to include only those websites reporting financial measures of costs. Hence, we excluded resource utilization measures because no consistent definition could be found and because many such indicators (e.g., use of antibiotics or length of stay) could also be considered to be quality indicators. Each reviewer determined if the website should move forward by indicating a "yes," "no," or "unsure." A detailed reason was recorded to explain the reviewer's decision. If the

reviewer was "unsure" about a website or if there was disagreement between reviewers, an explanation was provided and an investigator (JB) made the final decision.

In the final abstraction phase, data for each site were independently abstracted by one reviewer using a standardized data abstraction form and the consumer centeredness of the website was evaluated using the taxonomy described below. A validity test was conducted to ensure consistency of abstraction between the independent reviewers (YC and TK) for five websites. Any inconsistencies were resolved through consensus before moving forward with the review of the entire database. For each site, the reviewers (YC and TK) extracted the following information: the web address, the owner of the website, the setting of health care delivery for which information is reported, the presentation of costs, the type of cost measures, and the level of comparisons. The web address is the URL for the site and the owner of the website is the party responsible for populating and maintaining the website. The settings of health care delivery included, but were not limited to, inpatient, outpatient, nursing home, or emergency room settings. The presentation of costs were shown as dollar values, symbols representing cost measures created uniquely for that website, or graphs containing cost information. Reviewers extracted the type of cost measures, which included, but were not limited to, average costs, average charges, average reimbursements, and average out-of-pocket expenses. Lastly, reviewers extracted the level at which comparisons can be displayed on the site, such as comparisons between facilities, between counties, between individual providers, or comparisons with state and national benchmarks.

GQ 2: Are the measures of costs that are being reported consumer centered?

To assess if current publicly reported measures of costs are consumer centered, we developed and applied a novel taxonomy. The creation of this taxonomy of consumer centered public reporting of cost measures were informed by our targeted literature review (Appendix A), engagement with key informants and by our direct observation of current public reporting practices. A combination of objective and subjective data was abstracted from the public reporting websites reporting cost measures by two reviewers (YC and TK) and discordance between the reviewers was resolved by engaging the entire study team. Summary measures were calculated for the overall taxonomy and across key domains to inform which aspects of current public reporting practices were most consumer centered. Furthermore, difference between the characteristics of the most and least consumer-centered public reporting websites was compared.

GQ 3: What are the intended and unintended consequences of consumers' use of public-reported cost data?

Our assessment of the consequences of publicly-reported cost data, the impact on consumers' satisfaction and decisions, and the current gaps and needs for research was informed by our targeted literature review and engagement with key informants. Based on this engagement with key informants, and given the paucity of literature detailing the impact of public reporting on consumers, we conducted a brief descriptive review of those semi-public reporting programs mainly offered by for-profit companies.

Results

All three guiding questions (GQs) were informed by our key informant interviews and our targeted literature review (see Appendix A). Based on a review of Medline, Econlit, and Scopus and supplemented by hand searching, a total of 1,024 articles were assessed. Of these, 242 were duplicates, 632 were excluded based on title and abstract review, and 116 were excluded based on a full text review. Of the remaining 38 articles, it was deemed that 21 could assist in answering GQ 1, 23 were relevant for answering GQ 2, and 27 could inform GQ 3.

GQ 1: What measures of costs about health care providers and facilities have been publicly reported?

Our first GQ regarded the current practices for public reporting as implemented in publicly available websites. We evaluated the characteristics of the reporting organizations, including which entities are engaged in public reporting, the characteristics of the information reported, including what categories of cost data are reported, and ways in which public reporting has been motivated by current health care policy changes.

Several articles found in our targeted literature review described websites that publicly report health data (Box 5). An example is the article by Kullgren et al. (2013) in which the authors describe websites reporting 62 state-based health care prices. This article found that most websites provide prices of inpatient care for medical conditions (73%) or surgeries (71%), and that information about prices of outpatient services are reported less often. Most prices reflected billed charges (81%) rather than costs, with few estimated for a specific health plan (8%). Sinaiko and colleagues (2011) also found that information on total and out-of-pocket costs was available in some markets. Information on the public reporting of prominent forerunner states such as New Hampshire that have well-established reporting mechanisms is prevalent in the literature on this topic.

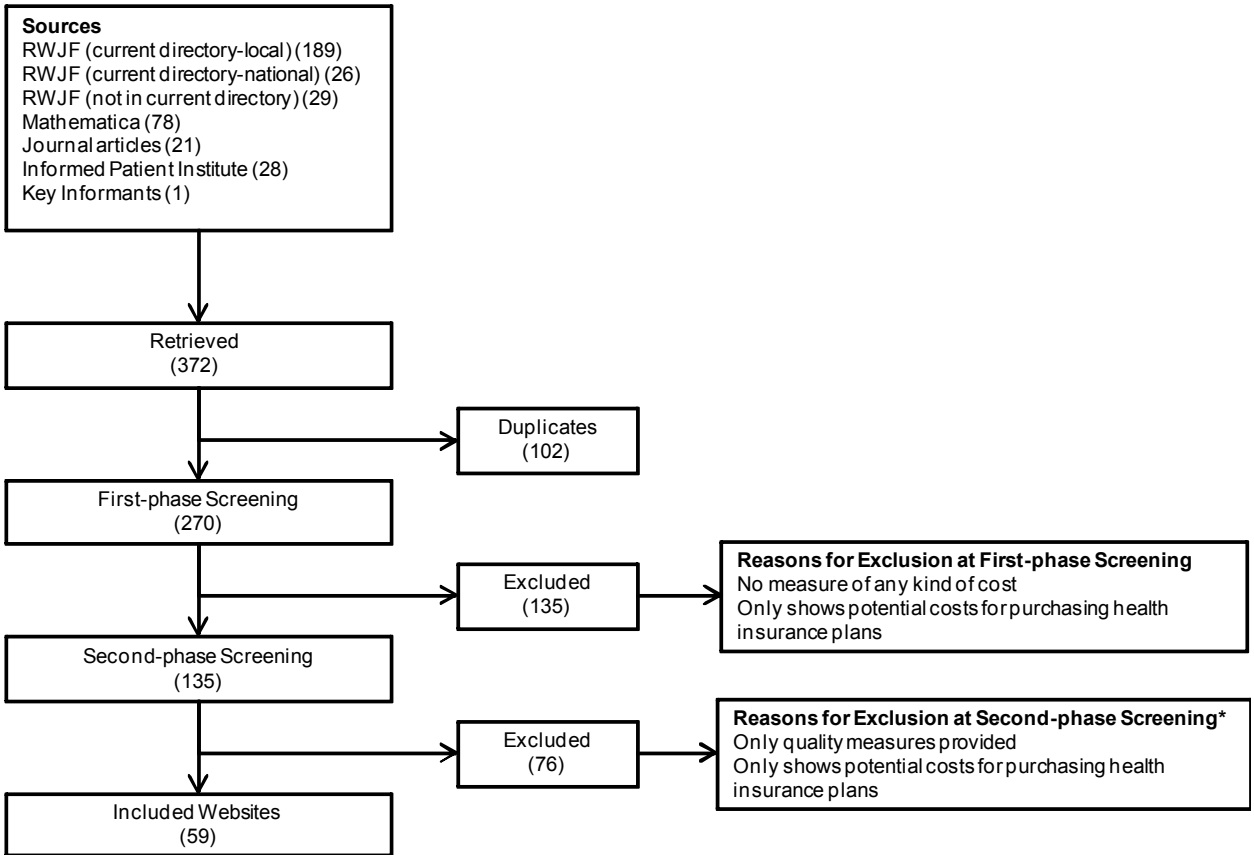
In addition to a review of the literature concerning such public reporting of costs, we also reviewed public reporting websites designed for comparisons of providers and facilities within a geographic area, rather than individual instances of providers and facilities reporting their own costs (with or without presenting a benchmark). As this project did not engage in primary data collection, but rather used evidence synthesis techniques, we needed to identify a set of candidate public reporting websites from publicly available sources. These sources were determined through discussions with AHRQ and key informants and through our targeted literature review. Five sources were used to identify these sites (Box 5).

Box 5: Five sources used in the environmental scan	
O'Neil et al., 2010	This report by Mathematica Policy Research focused on the public reporting on community programs, health plans, hospitals, or physicians at the local, regional, state, and national levels. It was aimed at providing the National Quality Forum with an assessment of public reporting programs and information to support decision making around public reporting.
RWJF, 2013	A master list of public reporting websites that serves as a directory of websites to help consumers find reliable information on health care costs, both locally and nationally. Additionally, we reviewed websites that had been excluded from the current directory (e.g., websites that contained old data or information on quality only).
Kullgren et al., 2013	This study described 62 state health care price websites and identified opportunities to improve the level of publicly reported health care information. This study used a systematic internet search to form the database of websites.
Yegian et al., 2013	This study included a targeted literature review, key informant interviews, and a review of selected online cost and quality reporting efforts. This study identified the lack of out-of-pocket expense data and quality data (both of which facilitate informed decision making) as potential shortcomings
Informed Patient Institute (IPI)	Relevant public reporting websites identified from the Informed Patient Institute (IPI), an independent nonprofit organization that provides online information about health care quality and patient safety for consumers. IPI does not rate individual health facilities or professionals. Instead, IPI assesses the usefulness of online "report card" sites about doctors, hospitals and nursing homes. A list of links to over 30 report cards with cost information in the IPI database was included in our review.

Across these sources, 372 public reporting websites were identified (Appendix B). We identified 102 duplicates out of 372 candidate public reporting websites that we thought might report costs (Appendix B). During the first phase of review, 135 websites were included for further review. Of the 135 websites, during the second phase of review, 59 websites were included for data abstraction and synthesis (Figure 2). For the purposes of data extraction, we created a standardized form to aid the review. Using the information given in the explanation of inclusion of websites in the second review phase and taxonomy of consumer-centeredness (outlined elsewhere), key information available on the websites was outlined. This outline served as the basis for the six types of information (owner of website, health care setting, type of data, measure of cost reported, year of reported data, comparators available) that were abstracted from all the websites during the final data abstraction phase. We pilot tested this form for validity prior to the data extraction.

Data extracted from the final set of 59 websites allowed some insight into the range of information available to consumers. About three-fourths of websites were owned either by state health departments or state hospital associations. A few were owned by independent organizations such as Aligning Forces Humboldt, Clear Health Costs, or The Commonwealth Fund. All websites provided cost data on inpatient procedures (n=59) and of these, about half provided information on both inpatient and outpatient episodes of care (n=31). Three websites were constructed specifically to provide data on nursing homes; these provided daily rates for private or semi-private rooms. A limited number of websites offered information on emergency room visits or urgent care needs (n=5).

Figure 1: Review of public-reporting websites



Ninety-eight percent of websites provided explicit dollar amounts as cost measures (Table 1). Cost measures were reported as "average charges" for the majority of the websites (71%). Only 2% of websites, however, provided explicit information on patient's out-of-pocket expenses. Further, only one website differentiated between costs for insured and uninsured individuals. The Maine Health Data Organization allowed the consumer to navigate the website either as an insured patient or an uninsured patient. The site asked the user to determine potential costs, which differs based on the options patients chose when they first visited the site. Some websites offered a range of costs, providing consumers with the highest and lowest charge or cost charged for a given procedure or visit by the selected provider. The five websites providing only Medicare procedure costs indicated the median Medicare payment. Methods of comparison varied but most of the websites enabled comparison between hospital facilities. About one quarter of websites allowed for a comparison of costs across selected counties or regions. For some sites, consumers could search for information using their zip code. Many of them compared provider or hospital information to state benchmarks, which allowed for comparison on a larger scale (42%).

Table 1: Characteristics of public-reporting websites reporting cost measures	
Characteristics of websites	**Percent**
Owner:	
Owned by state health departments or state hospital association	75%
Setting:	
Provided information on inpatient care	100%
Provided information on both inpatient and outpatient care	53%
Provided information on emergency care services	9%
Provided information on nursing home daily room rates	5%
Type:	
Reported costs as dollar amounts	98%
Represented cost symbolically	7%
Measure of cost:	
Reported average charges	71%
Reported out-of-pocket payments	2%
Year of data:	
Reported data from 2011 and later	76%
Reported data from 2013	14%
Comparison:	
Allowed comparison against other hospitals, facilities or providers	100%
Allowed comparison against state averages	42%

As Table 2 shows, websites offered a wide range of cost measures to their consumers. Common terminology used by these reports included charges, costs, payments, prices and reimbursements. Charges often reflected a value taken from a hospital charge master or the value that was sent to patients or insurance companies on the bill for a visit or service.

Two reviewers (TK and YC) used the final 59 websites to abstract the definition of the cost measures provided in Table 2. Many websites provided definitions or explanations available for the data they displayed to facilitate consumer understanding. Definitions for charges, costs, payments and prices were fairly consistent across websites and so conflicts between reviewers were minimal. Definitions for “out-of-pocket costs” and “reimbursements” were only found on one website and are shown in Table 2.

Many websites explicitly stated that these were not the same values that patients paid for a health care service or visit. Costs referred to the actual "cost of production" for a service, a test, or a visit. These are not representative of what patients or insurance companies are responsible for paying. Prices were often defined in a similar way to costs. Payments and reimbursements often referred to what the insurance company or carrier were responsible for paying to the provider or hospital. One website provided a measure of "out-of-pocket" cost which was defined as what consumers would be responsible for paying on their own. The variety of terms demonstrates the lack of uniformity across different public reporting websites. Further, the majority of these measures are not "actionable" pieces of information, as they do not represent what patients are responsible for paying.

Table 2: Cost measure identified and representative definitions extracted from websites	
Measure of cost	**Definition**
Billed charges (average)	Standard values sent to patient, insurer. Based on the standard Uniform Billing form, which is utilized by hospitals to bill for their hospital charges. Average is the total billed charges divided by number of patients that have received that service, procedure.
Charge (total)	The amount a facility bills for a patient's care is known as the "charge." Sum of all charges for a given type of visit/diagnosis-related-group (DRG)/Major diagnostic category (MDC) is total charge. This measure included any services, health care or not, and amenities provided to the patient during their hospital visit.
Charges (average)	Total charges divided by the number of discharges for the selected service. Average charges can be significantly affected by a few unusually high or low charges. These charges were often displayed on a hospital "charge master."
Charge (median)	The amount a facility bills for a patient's care is known as the "charge." This is not the same as the actual cost or amount paid for the care. Median is the midpoint of all charges. Charges were often displayed on a hospital "charge master."
Charge (range)	The set of charges specified by a maximum and minimum value that a hospital has billed for a particular condition or procedure. The minimum value is the 25th percentile and the maximum value is the 75th percentile.
Costs (average)	The actual costs of production. The average is calculated at various levels of comparison depending on the information provided on the website.
Costs (median)	The actual costs of production. These are median dollar amounts meaning that half of the cases at this hospital cost more and half cost less.
Costs (range)	The actual costs of production. The range gives the maximum and minimum value at the level of aggregation given on the particular website This range was often provided by displaying the 10^{th} and 90^{th} percentile of price or the 25^{th} and 75^{th} percentile of price.
Daily rate (average)	The mean rates per day charged to residents in a nursing home for a single room, double room. This daily rate sometimes applied to the charge per day for a given hospital admission.
Out-of-pocket cost	An estimate of what you will pay based upon your health coverage, your deductible, and your coinsurance. Deductibles and co-insurance are paid after the service is provided.
Payments (average)	Total payments divided by the number of patients for the selected service. The average Medicare payment includes the base payment, DRG for inpatient or Ambulatory Payment Classification for outpatient in accordance with Medicare payment policies.
Payment (median)	The midpoint of all payments to the hospital for a particular DRG. That is, half the payments were lower and half the payments were higher than the median payment.
Payments (insurance, combined)	The combined amount that the health care provider receives from patients and their insurance companies. This payment includes any coinsurance or deductible patient are responsible for paying.
Price (average)	Total prices of all services, goods, and procedures for which a separate charge exists divided by the number of services, goods or procedures. It is used to generate a patient's bill. It is often listed on a charge master.
Price (range)	Represents the maximum and minimum value of prices of all services, goods, and procedures for which a separate charge exists divided by the number of services, goods or procedures. This range was often provided by displaying the 10^{th} and the 90^{th} percentile of price or the 25^{th} and 75^{th} percentile of price.
Reimbursements (average)	The average amount a health carrier/ insurance company paid to the hospital, provider, or other care facility the consumer visited. If available, these were defined to the consumer as separate from out-of-pocket payments.

GQ 2: Are the measures of costs that are being reported consumer centered?

Previous key studies identified by our key informants identified an important gulf between public reporting as was legislated or mandated and public reporting as is implemented. Can consumers use the publicly reported data for health care decisions that matter to them? We wished to capture diverse observations in the literature about the consumer centeredness of public reports. Users of health care services desire information that is relevant: "*What consumers seem to want are quality data at the physician level and cost data that reflect their personal out-of pocket exposure*" (Yageian et al., 2013). However, current publicly reported cost information is not useful for the consumer. The "*unsurprising conclusion*" of a 2007 study was that "*consumers were more likely to be confused than informed*" by such presentations (James, 2007).

Reports tend not to distinguish between facility charges and actual costs borne by the consumer. Recent reports reiterated such observations, e.g., "*consumer visitors to the participating sites indicated they would like to see information more specific to their decision-making needs*" (Bardach et al., 2011). There is also wide variation in the information presented in such reports (Christianson et al., 2010). "*Measures ranged from complex to easily understood, varied widely in the number pertaining to any specific condition and suggested little consensus regarding the desirability of aggregating information into composite measures*" (Christianson et al., 2010). While the quality and consumer centeredness of the information presented seems to be improving over time, a recent analysis relying on expert opinion concluded that the current knowledge in the fields of cognitive psychology and health care decision-making has not been incorporated into these reports (Sinaiko et al., 2012).

PRICE Taxonomy

We developed a novel taxonomy (PRICE) to distinguish the consumer centeredness of websites that publicly report health care cost data. As detailed in Table 3, our taxonomy focuses on five domains: price transparency; real comparisons; information on value; connect to care; and ease of use. Each of the five domains of the PRICE taxonomy was defined, and subsequently scored, across three criteria. The description and source for each of the criteria is also detailed in Table 3. Most of the criteria within each domain are independent of each other, but for some domains they could be considered to be hierarchical in nature.

Table 3: PRICE taxonomy of consumer centeredness for publicly-reported cost measures			
Domain	**Criteria**	**Description**	**Source**
Price transparency	Out-of-pocket costs	The data reflect a consumer's personalized out-of-pocket expenses, including insurance status, remaining deductible and copay rates.	Harvey, 2013; Mehrotra, 2012; Sinaiko, 2012; RWJF, 2012
	Timely cost data	The data are less than 3 years old.	CPR, 2012; QASC, 2008; KI[a]
	Clear description of costs	The site clearly describes the type of price information being shared (e.g., costs, charges, average vs. median).	Kullgren, 2013; KI
Real comparisons	Shoppable conditions	The data include non-urgent and non-severe conditions for which consumers want prompt, high-quality attention.	Kullgren, 2013; Sinaiko, 2012; RWJF, 2012; KI
	Market comparisons	The site allows consumers to compare providers to other "relevant" providers and not just benchmarks.	CPR, 2012; QASC, 2008; KI
	Customizable searches	The site has a search capability that can be customized to the consumer's wants and needs (e.g., geography, setting).	CPR, 2012; KI
Information on value	High-value providers	The site guides consumers to higher-value providers.	CPR, 2012; Mehrotra, 2012; Hibbard, 2012; KI
	Quality comparators	The site pairs cost data with quality data (outcome or process measures) or with patient experience data on same page.	Kullgren, 2013; Harvey, 2013; Hibbard, 2012; RWJF, 2012; KI
	Patient ratings/reviews	The site includes ratings, reviews by patients, or both.	CPR, 2012; Sinaiko, 2012
Connect to care	Address/contact information	The site provides the address and contact details for an individual provider or facility.	KI
	Acceptance of new patients	The site identifies whether a provider or facility is accepting new patients and the types of insurance accepted by the provider or facility.	CPR, 2012
	Logistics	The site provides logistics, such as maps, location, directions and information on public parking.	Sinaiko, 2012
Ease of use	Simple interface	The site uses a simple, intuitive, and easy-to-navigate user interface for sharing data.	CPR, 2012; Mehrotra, 2012; RWJF, 2012; KI
	Understandable	The site uses plain language and understandable symbols to make relevant information accessible.	CPR, 2012; Mehrotra, 2012; RWJF, 2012; QASC, 2008; KI
	User support	The site includes sufficient instructions, frequently asked questions, or online or telephone support.	CPR, 2012; KI

[a] Information generated/supported by key informant interviews

Price Transparency is a central concept to the public reporting of cost data (Sinaiko et al., 2011). We describe price transparency in terms of presentation of: a) out-of-pocket costs; b) timely cost data; and c) clear description of costs. Presenting out-of-pocket costs for each consumer has been identified as important for effective decision making (Sinaiko et al., 2011).

To most accurately generate an estimate of out-of-pocket costs, websites must have the functionality to incorporate the consumer's insurance status, remaining deductible and copayment/co-insurance rates. We considered costs since 2011 as being timely. Timely cost data helps ensure that consumers have the best information available to make decisions. A clear description of costs involves communicating the type(s) of price data being shared with the consumer (e.g., costs, charges, reimbursements) and if the value represents a summary statistic, such as the mean or median. To make an informed decision, it is important for consumers to clearly understand the types of data being shared.

Real Comparisons is a key tenant to the public reporting of provider performance, whether that is the reporting of quality data, cost data, or both. (Ketelaar et al., 2011; Faber et al., 2009). We describe comparisons in terms of: a) shoppable conditions; b) market comparisons; and c) customizable searches. Shoppable conditions are those conditions that are non-urgent and non-severe, for which consumers want prompt, high-quality attention. Consumers can use cost data as part of their decision-making for these types of conditions (RWJF, 2012). Market comparisons allow a user to compare a provider or facility against other 'relevant' providers or facilities, and not just a static benchmark. Consumers want the ability to compare options easily and evaluating against benchmarks requires an understanding of the benchmark itself, which can often be unclear (CPR, 2012). Customizable searches allow the user to narrow their search to those providers that meet a specific criterion, which could include searching by geography or setting. This ensures that the search results only compare providers from whom the consumer would actually seek care.

Information on Value describes whether the maximum benefit is obtained from the resources spent. We note whether sites identify: a) high-value providers; b) quality comparators; and c) patient ratings/reviews. High-value provider websites use explicit labels or symbols to intentionally guide consumers to health care providers that deliver higher value. Research has shown that consumers find an explicit indicator helpful in selecting higher-value providers (Hibbard et al., 2012). Quality comparator websites pair cost data with quality data, patient experience data, or both. The pairing of quality data with cost data has been identified as a best practice; without the inclusion of quality data, many consumers conclude that higher costs reflect higher quality (Hibbard et al., 2012). Patient rating websites include patient-provided ratings or reviews about their experience with the provider or facility in addition to the cost data. The inclusion of consumer feedback has become the norm for most websites intended to facilitate purchasing decisions.

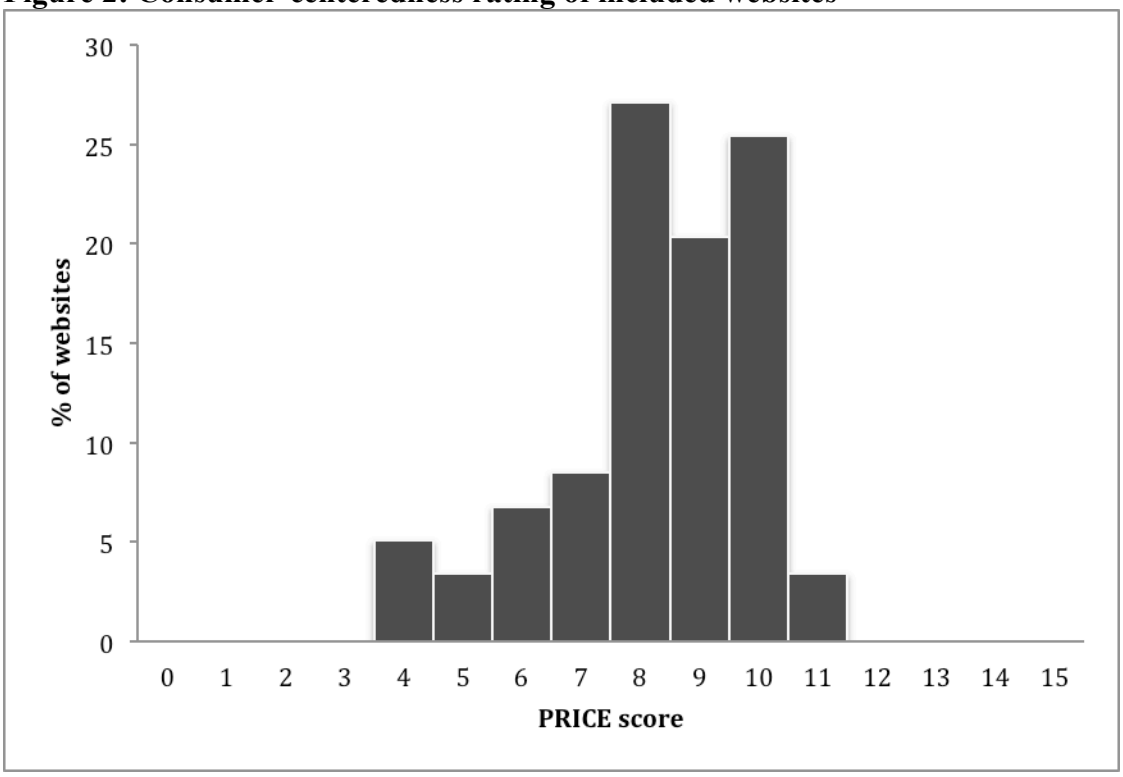
Connect to Care is important for helping consumers make the step from decision making to arranging care. We describe sites as facilitating access to care if they present: a) address/contact information; b) information on acceptance of new patients; and c) logistics. These are consumer-centered attributes as address/contact information reflects a website that provides the address and contact details for the provider or facility. This information is helpful to consumers if they choose to seek care from a provider or facility identified on the site. Acceptance of new patients identifies whether the facility or provider accepts new patients and types of insurance. It is not helpful for consumers to choose a provider that is not accepting new patients, or has a practice that cannot easily be found. Logistics includes providing information such as maps, location, direction and information on public parking.

Ease of Use is important for promoting consumer comprehension of the data and increases the likelihood that a consumer will want to return to the site for future information (Hasan, 2011). We describe ease of use by detailing: a) a simple interface; b) understandable site; and c)

user support. Simple interface refers to websites that could be considered, subjectively, as having a simple, intuitive, and easy-to-navigate user interface. These characteristics reflect good general website design principles (Hasan, 2011). An understandable site reflects a site that uses plain language (i.e., language at a 5th grade reading level or less) and simple symbols for communicating information. Use of simple language and symbols promotes a greater comprehension of the data. User support includes support for the consumer, through instructions, frequently asked questions (FAQs), and online and telephonic support. These resources provide a consumer with support in case they have any questions or problems (CPR, 2012).

The consumer-centeredness of websites was evaluated using the PRICE taxonomy and involved combinations of objective and subjective evaluations by two reviewers (YC, TK). The percentage agreement between these two reviewers, across all 15 attributes in the taxonomy, was 83.1 percent, with a kappa statistic of 0.66. All disagreements were resolved through group discussion among the two reviewers and via weekly meeting of the larger research team. Figure 2 shows the distribution of "consumerism" scores across all 59 websites, according to our taxonomy. The mean and median "consumerism" scores were 8.3 and 8.0, respectively, out of a total of 15 points. Scores ranged from a minimum of 4 to a maximum score of 11. About three-fourths of the websites screened (n=45) met at least half of the criteria of consumer-centeredness, as indicated by a score of 8 or greater.

Figure 2: Consumer-centeredness rating of included websites



Mean domain scores were highest for Ease of Use (2.63) and Real Comparisons (2.39). The mean domain scores were the lowest for Information on Value (0.70) and Connect to Care (0.80) (Table 4). About 80 percent of websites scored a 2 on a scale of 0-3 for price transparency and about 50 percent of websites scored a 3 for Real Comparisons and 1 for Connect to Care. Most websites did well on ease of use domain with about 70 percent scoring a 3.

Table 4: Scoring on the domains of the PRICE taxonomy of consumer centeredness					
Score	Mean (SD)	0/3 (%)	1/3 (%)	2/3 (%)	3/3 (%)
Price transparency	1.78 (0.46)	1.7	18.6	79.7	0
Real comparisons	2.39 (0.62)	0.62	0	6.8	47.5
Information on value	0.70 (0.50)	32.2	66.1	1.7	0
Connect to care	0.80 (0.69)	35.6	49.2	15.3	0
Ease of use	2.63 (0.69)	1.7	6.8	18.6	72.9

In terms of scores on specific criteria, about 97% of the websites offer data on "shoppable" conditions and clearly described measures of cost. Nearly 90 percent of all the websites we reviewed had a simple and easy-to-navigate interface and used understandable language and symbols to make information accessible. Many other attributes were widely available on more than half of the websites. These included providing timely data (80%), comparing relevant providers (70%), facilitating flexible searching for providers (73%), pairing cost data with quality data (68%), providing contact information for support (78%) and providing an address and contact details for the provider or facility (64%) (Table 5).

Table 5: Percentage of websites scoring on each criterion		
Domain	**Criteria**	**Percent of websites scoring on the criteria**
Price transparency	Out-of-pocket costs	1.7
	Timely cost data	79.7
	Clear descriptions of costs	96.6
Real comparisons	Shoppable conditions	96.6
	Market comparisons	69.5
	Customizable searches	72.9
Information on value	High-value providers	0
	Quality comparators	67.8
	Patient ratings/reviews	1.7
Connect to care	Address/contact information	64.4
	Acceptance of new patients	0
	Logistics	15.3
Ease of use	Simple interface	89.8
	Understandable	94.9
	User support	78.0

Several of the PRICE criteria were not commonly found in the websites run. For example, only the New Hampshire Insurance Department were the only ones that provided data on out-of-pocket expenses. None of the websites provided information on providers accepting new patients and the type of insurance they accepted. Use of "high-value" or efficient care is highly emphasized in health care, yet no websites were found to guide consumers to higher-value providers. In comparing the websites that were most and least consumer centered defined as the top and bottom 10 percent of website as per the PRICE taxonomy. On comparing the top 10 percent websites against the bottom 10 percent (based on PRICE taxonomy scoring), it was apparent that websites that scored well were those that provided information about inpatient and outpatient services more than about nursing homes. Eighty-three percent of websites in the top decile reported average charges in comparison to 50 percent in the bottom decile. The websites that scored best also provided more up-to-date data and allowed for comparison against the state average. The top scoring websites were also more user-friendly, with customizable searches and provider contact information more commonly displayed then in bottom decile websites (Table 6).

Table 6: Differences between most and least consumer-centered websites		
Characteristics of websites	**Most[a]**	**Least[b]**
Owner:		
Owned by state health departments or state hospital association	100%	83%
Setting:		
Provided information on inpatient care	100%	67%
Provided information on both inpatient and outpatient care	67%	33%
Provided information on emergency care services	33%	0%
Provided information on nursing home daily room rates	0%	33%
Type:		
Reported dollar amounts as cost measures	83%	100%
Represented cost symbolically	16%	0%
Measure of cost:		
Reported average charges	83%	50%
Reported out-of-pocket payments	0%	0%
Year of data:		
Reported data from 2011 and above	100%	67%
Reported data from 2013	87%	17%
Comparison:		
Allowed comparison against other hospitals, facilities or providers	100%	100%
Allowed comparison against state average	67%	17%

[a] Defined as highest decile (10%) on the PRICE score of consumer centeredness
[b] Defined as highest decile (10%) on the PRICE score of consumer centeredness

GQ 3: What are the intended and unintended consequences of consumers' use of public-reported cost data?

We investigated the intended and unintended consequences of the public and semi-public reporting of cost data to consumers. Semi-public reporting is the reporting of health care cost information only to consumers having an affiliation with the entity dispersing the data. In other words, the information is only visible to consumers through their employers, their health plans, or perhaps a third party vendor of this information. We describe in this section observations in the literature about the impact of reporting health care cost information.

Studies indicate that consumers may value public reporting of cost information. Yegian et al. (2013) reported that consumers are interested in cost and quality information, but their awareness and use of this information is low. There are three explanations for this discrepancy. First, many consumers are unaware of the variation that exists in health care costs, and thus are not motivated to seek comparative information (Carman et al., 2010). Second, consumers with relatively little cost-sharing responsibility lack the incentive to consider price in their decision making. Third, consumers' lack of use of quality and cost information "*may be influenced by the adequacy of existing resources… [a] lackluster response from consumers may reflect issues with …the design of the tools*". While tools may be available to consumers, they may not be sufficiently informative or easy to use. Consumers are generally interested in out-of-pocket expenses specific to their health plan or financial situation, but many public reporting sites only provide total and average charges. While information about gross costs highlights the variation in health care and builds awareness, it is too general for consumers to use, and is better suited for informing health plans and employers (Yegian et al., 2013).

In the changing health care landscape, more consumers are choosing high-deductible health plans and plans with reference-based pricing; these consumers value comparative cost assessments as they pay for many services out-of-pocket (Saiko, 2011; Preidt, 2010; Rabin, 2012). A potential consequence is that "*greater price transparency [in conjunction with increased patient cost-sharing] could make way for greater market forces and decreased prices in the health care industry*" (Harvey et al., 2013).

The literature supports that the reporting of health care cost data increases consumers' awareness of the variation that exists in health care costs (Yegian, 2013). It is expected that market forces will narrow the range of prices and lower costs by encouraging cost-conscious shopping and stimulating price competition (Sinaiko et al., 2011). Whether health care costs decrease or become more consistent across service providers depends partially on whether health care services are a good like other goods found in the market, and also on the "*market power and concentration of health care providers relative to insurers*" (Tu et al., 2009). Third-party vendors that deliver semi-public cost information to consumers (described in detail below) provide educational material to their clientele. These companies attest that this improves consumers' health literacy and numeracy, and engages consumers to be more cost-conscious (Yegian, 2013).

Other studies describe the potential unintended consequences of reporting of cost data. Public reporting of cost data increases price transparency; it is expected that public reporting of cost data will induce price competition and narrow the range of prices and lower costs. However, health care providers could also choose to raise prices if they thought the market would tolerate this. The direction of change depends on the "*market power and concentration of health care providers relative to insurers*" (Tu et al., 2009). Consumers could also drive up health care

spending if they are presented with health care cost information without concurrent quality data. As indicated by a number of experimental studies, notably those of Hibbard et al., consumers tend to interpret higher costs as indicating higher quality, or, conversely, that lower costs indicate an absence of high-quality services or providers (Hibbard et al., 2012). These studies indicate that providing quality information along with cost information encourages consumers to choose a combination of cost and quality that yields higher value care.

Through our literature review and key informant interviews, we identified a number of research gaps related to the public reporting of health care cost information. There is little data on how much it would cost to provide consumers personalized cost information on a large scale – specifically, the costs of developing the web interfaces, providing the services, ensuring the cost data are accurate, and that consumer privacy is protected. We note also that the public reporting of health care costs is predominantly online. However, there has been little investigation as to whether the digital divide in the U.S. adversely affects disadvantaged or older consumers' access to health care cost information and whether this interferes with their ability to obtain high-value care.

Table 7: Examples of Semi-Public Websites Reporting Health care Costs

Vendor	Setting	Measures	Comparison	Subscription
Castlight Health www.castlighthealth.com	Outpatient	Reference based pricing, out-of-pocket costs	Facility, provider	Employer subscription
HealthSparq www.healthsparq.com	Inpatient, outpatient, urgent care, ER	Total cost estimates, professional facility and ancillary fees, out- of-pocket estimates	Facility and/or provider	Health plan or employer subscription
Truven Health Analytics www.truvenhealth.com	Inpatient, outpatient	Total cost estimates, out-of-pocket costs estimates	Facility, provider, geographic region	Health plan or employer subscription
Change Healthcare www.changehealthcare.com	#	#	#	Health plan or employer subscription
ClearCost Health www.clearcosthealth.com	#	#	Provider	Health plan, union or employer subscription
Compass www.compassphs.com	Outpatient	#	#	Employer, individual or family subscription

Insufficient data in public domain to determine

Given the sparse data about the consequences of public reporting, we sought additional information from a review of semi-public sites that report on health care costs. In contrast to public websites, semi-public websites may be better able to offer consumers the individualized cost information they need for decision making (Table 7). Semi-public websites are generally owned by private companies (i.e., health plans or third party vendors). Through our targeted literature review and key-informant interviews, we identified five vendors that report cost data to

enrolled clientele. In these examples, consumers are able to access cost information via a personalized Internet login if their health plan or employer subscribes to (i.e., subsidizes) the vendors' services (Table 7).

The specifics of what vendors offer is largely unknown because their products are proprietary. Based on their advertisements, vendors offer consumers online platforms that provide educational material and personalized health care cost information. Some of the vendors also offer in-person, e-mail, and phone consulting services to consumers. All vendors listed in Table 7 offer didactic material so their consumers can interpret and use the cost information. The informational material includes definitions of common terms, an explanation of insurance coverage, an overview of the health care system and its navigation, and tutorials on medical billing. These are all intended to be of value to the consumer.

The vendors also provide consumers with individualized cost information based on the consumer's chosen health plan. They often break down costs into total cost estimates and out-of-pocket estimates. Depending on the platform, consumers can also compare in-network and out-of-network inpatient, outpatient, urgent care, and emergency department costs. Within these care settings, the vendors report on costs for medical treatments, procedures, imaging tests, and laboratory tests. One vendor, *Healthsparq*, also breaks down costs by professional, ancillary, and facility fees. Consumers can compare costs across facilities, providers, zip codes, and geographic regions. They have access to providers' contact information and maps to facilitate travel. Consumers can also receive updates on their accumulating costs for the year to assist with budgeting. In addition to cost data, consumers also receive quality data so they can better gauge the value of the care they receive. Another vendor, *Change Healthcare*, states that it tailors recommendations based on consumers' preferences regarding cost, quality and convenience.

The vendors typically market their products to health plans and employers that are interested in reducing their enrollees' or employees' health care costs. It is unclear how much plans and employers pay for these services. The vendors advertise that the services are a good return on investment because the services improve consumer health literacy, increase engagement, and reduce costs (for health plans, employers, and consumers). *Compass*, another of the five vendors we reviewed, also offers services to individuals and families, independent of a health plan or an employer. The annual service fee for an individual is $108 and for a family of up to 8 members is $215. They advertise that "*on average, Compass members save $620 every year by avoiding overpriced medical care*, " thus suggesting that their consumers use the information.

Summary and Implications

We present in this section the summary of the key findings first and then discussed the strengths and limitations of this report, the factors limiting impact and diffusion of the public reporting sites, and implications for research and policy.

Key findings

The key findings from this report are highlighted in Box 6. GQ1 asked about the measures of costs that providers and facilities publicly report. This study identified and reviewed 59 publicly available websites of which about three-fourths were owned by state health departments or state hospital associations. A few of these websites were owned by independent organizations. All websites reported information on inpatient services and about half of these websites reported information on both inpatient and outpatient services. Three websites reported were constructed specifically to report information on nursing homes. A select few websites reported information on emergency room or urgent care services. Cost measures were reported as "average charges" for most of the websites. Other levels of cost aggregation included average costs, median charges, median Medicare payments, and a specified range of charges. Only one website explicitly provided information on patient's out-of-pocket expenses and only one website differentiated between costs for insured and uninsured individuals. With the exception of one website that provided representative symbols, all provided dollar amounts as cost measures. The levels of comparison available to patients varied across websites but the majority of websites enabled comparison between hospital facilities. About a quarter of the websites allowed for comparison of costs between selected counties or regions within a state. Many websites allowed for the comparison to state or national benchmarks.

After determining what measures of costs were reported, we sought to answer GQ2, which asked if these cost measures were consumer-centered. We developed the PRICE taxonomy of consumer-centeredness. This taxonomy focuses on five domains including Price Transparency, Real Comparisons, Information on Value, Connect to Care, and Ease of Use. The websites included in this report were rated on the basis of the three sub-criteria within each of these five domains. The overall score was out of 15 and scores on each domain were out of a possible 3 points. The mean and median "consumerism" scores were 8.3 and 8.0, respectively. Websites scored between 4 and 11 on the taxonomy. About 75% of the websites met at least half of the criteria detailed in the taxonomy, which is demonstrated by a score of 8 or greater out of 15. The mean scores for the domains Ease of Use and Real Comparisons were the highest and lowest for Information on Value and Connect to Care. Nearly 80% of websites scored a 2 out of 3 on the Price Transparency domain and about half of the websites scored a 3 out of 3 on the Real Comparisons domain. Evident weaknesses were the lack of information on out-of-pocket expenses as only one website scored on this criterion. None of the websites scored on the high-value providers attribute indicating that the information does not move patients towards high-value providers. Another evident weakness is the lack of a forum for patients to express their satisfaction or dissatisfaction with the websites. Strengths included clear descriptions of costs, definitions of terms when required, simple and understandable display, and customizable searches on shoppable conditions.

GQ3 addressed both intended and unintended consequences of the public reporting of cost data. There exists a general paucity of information on whether consumers make use of this publicly reported data. Currently implemented websites do not have a standardized mechanism for tracking the use or effectiveness of this information. As such, we were not able to

comprehensively evaluate consumer satisfaction with this information. This report was only able to closely examine five semi-public websites using demonstrations provided by the owners of those websites. These websites are more detailed and tailored to the individual patients because of a membership requirement or payment of a fee. However, these sites are hard to find and as a result have not been adequately studied. We do not have any data on how these consumers are using cost data. For example, consumers may be driven towards high-cost providers if they mistake cost as a representation of quality.

Box 6: **Summary of Key Findings**

GQ 1: What measures of costs about health care providers and facilities have been publicly reported?

- We identified freely accessible websites owned by state health departments, state hospital associations and independent organizations.
- The websites reported data on inpatient, outpatient, and emergency room or urgent care services. Some were specific to data on nursing homes.
- Costs were reported as average charges, average costs, median charges, median Medicare payments, or a specified range of charges. One reported out-of-pocket expenses.
- Levels of comparison on websites included between hospital facilities, across counties or regions, and state or national benchmarks.

GQ 2: Are the measures of costs that are being reported consumer-centered?

- We developed the PRICE taxonomy of consumer-centeredness focusing on five domains with three sub-criteria each.
- The mean and median "consumerism" scores were 8.3 and 8.0, respectively, out of a total of 15 points.
- The mean scores for the domains Ease of Use and Real Comparisons were the highest and lowest for Information on Value and Connect to Care. Weaknesses included poor scores on "high-value providers" and a lack of a forum for patients to express satisfaction with data. An evident strength was the clear display of information for consumers.

GQ 3: What are the intended and unintended consequences of consumers' use of public-reported cost data?

- There is limited literature on whether consumers use this information.
- Semi-public reporting websites are difficult to access, as there exist barriers to obtaining the information on these sites.
- There is limited evidence of how consumers use this data to make health care decisions.
- The targeted literature review of this report did not reveal any formal research prioritization for the future of publicly reported cost data.

Strengths and Limitations

Compared to the public reporting of quality indicators, the existing literature and approaches for publicly reporting cost measures are not well developed. This report represents the most comprehensive review on this emerging field to date, and as such it has both strengths and limitations.

The novelty of the taxonomy developed to assess consumer-centeredness of the websites was a notable strength of this project and makes a significant contribution to the conduct of future research. The foundation of the taxonomy was built upon information gathered from the targeted literature review of public reporting of cost data, interviews with key informants with expertise in this field, and the scan of public reporting websites. The taxonomy focuses on five key domains of consumer-centeredness as determined by the collection of the aforementioned resources. This taxonomy will serve useful in assessing new websites that are developed in the future and can also serve as a guide to those entities aiming to create websites to publicly report cost data. As seen in Box 6, a limitation of the taxonomy is that it has not been previously

validated. Without prior evidence of both internal and external validity, we cannot be absolutely certain about its accuracy, applicability and predictability for future uses. However, before application to the entire set of websites, two reviewers independently evaluated the same five websites in an effort to standardize the rating method. This was done to ensure both reviewers were defining each domain and its attributes in the same manner. Ultimately, the kappa statistic was sufficiently high and there was over 80 percent agreement on the ratings of the entire set of websites between the two reviewers. These attempts to standardize the rating method reduce the effects of the limitation.

A strength of this report was that quantified and categorized the cost measures reported by the public reporting websites. Given the variety of websites accumulated during the search, there was a significant amount of information available to provide an insight into the types of cost measures used in these reports. However, a limitation to the compilation of these measures, as seen in Box 6, was the ambiguity of some of the measures reported on the websites despite the assistance provided on the websites.

As mentioned above, key informant interviews were conducted to better gauge how this methodology is understood to work in current practices. Box 6 indicates the engagement of key informants as strength because simply reading the literature on such methodologies does not provide the whole picture. Gaining insight from experts in the field helped authors to decide what to look for in the online sources. Further, the multidisciplinary nature of the research team also helped retain different perspectives in terms of project direction, data interpretation, and next steps. However, this study is limited by the lack of consumer engagement or representation.

The variety of resources, both from the peer-reviewed literature and gray literature, proved to be strength of the report as they provided a great deal of information from different perspectives. However, as Box 6 indicates, this was a narrative review as opposed to a systematic review, and thus we may have failed to include every possible reference in answering the guiding questions. Further, as is often cited as an unintended consequence of public reporting are the possible adverse effects on minorities or vulnerable populations. The exacerbation of health disparities is of great importance in providing data to the public. We did not explicitly consider these issues in the targeted literature review and so may have failed to address their experiences with public reporting.

Although the double review of websites and ratings served to strengthen the standardization of the evaluation process, the reviewers were not representative of the population these websites intend to serve. By this we mean consumer-centeredness is difficult to capture without having actual consumers rate the websites themselves. It should be noted that this report, however, was meant to be a “first-look” into the public reporting methodology with regards to health care cost data and so incorporating patient subjects into the process was likely beyond the scope of this work.

As seen in Box 7, the assessment of semi-public websites is a limitation of this report. These websites are active and available to certain patient populations making them an important part of the discussion on public reporting overall. However, as there was a certain level of exclusivity to these websites, the sample size of semi-public websites was small and so it was difficult to give a general description of the functionality of these websites. For example, some of these websites required that a patient had to belong to a certain health insurance plan or network to obtain access to the cost data. Some websites would provide information for a certain fee and only a select number of owners provided demonstrations so we could assess their products better.

Box 7: Strength and Limitations	
Strengths:	**Limitations:**
✓ We developed and implemented a novel taxonomy to rate the consumer-centeredness of the websites. ✓ We attempted to measure and quantify measures of costs. ✓ Thus far, this is the most comprehensive list of websites publicly reporting data on health care cost data. The list covers a wide range of websites including those owned by hospital associations, state departments of health, and independent organizations. ✓ Although this was an environmental scan, we used a rigorous, systematic approach to search for websites and abstract data. Double review of websites and data abstraction ensured reliability of the method. ✓ Our multidisciplinary research team facilitated the combination of different points of view and approaches to the study. ✓ This report goes beyond a narrative work in that we created a rating scale for consumer-centeredness. ✓ Identified a gap, and possible avenue for future research, in semi-public reporting websites. ✓ The engagement of key informants helped to guide the methods of this report and helped determine what to look for in the data.	• The PRICE taxonomy was not previously validated. We compared our ratings to those with other grading systems however they did not have much variation and so it was difficult to compare or calibrate our ratings. • There exists ambiguity in the meaning of the costs reported and their application. • To find the websites in the list for this report, we used a review methodology including a targeted literature review and so there may be websites we missed. • We did not have any websites on individual providers, hospitals, or insurance companies. There are evident gaps in this list. • There was initial conceptual ambiguity in terms of abstracting the cost measures and some flexibility was necessary in applying data abstraction protocol. • There were not enough semi-public websites available to capture the current status of their consumer-centeredness. • There was a lack of consumer representation and engagement. • The descriptive aspect of this report is lacking evidence of the effectiveness of public reporting of cost measures from the literature.

Factors Limiting Impact and Diffusion

One primary issue uncovered during the assessment of the public reporting websites, as shown in Box 8, is the heterogeneity with respect to how the cost data are presented. As the owners of the websites varied, it follows that the cost measures presented to patients varied. Websites differ with regards to the level of detail with which they report cost measures. Some websites have an easy-to-follow interface in which consumers can navigate to get costs for particular categories of conditions. For example, many websites allowed patients to pick a geographic location, a hospital within that geographic region, a category of service (inpatient, outpatient, emergency), and then a condition based on generalized descriptions or classification codes. Other websites only highlighted the "most common" reasons for hospital admissions. Still others only provided one of the three previously mentioned categories of service. This lack of standardization hinders the impact and diffusion of this cost data. If no data is presented for specific health care services that patients may seek, then the website is not achieving its intended goals. A more standardized mechanism for displaying data across hospitals, providers, and insurance companies could help enhance the impact of this publicly reported data. Any patient, in any region of the country, seeking any type of care should ideally have access to the same type of information.

Box 8: Limiting Factors and Possible Solutions	
Factors Limiting Impact & Diffusion	Possible Solutions
• Heterogeneity of data across sources • Lack of "actionable" data for consumers • Need for appropriate levels of comparison • Lack of side-by-side display of quality and cost data • No campaign to promote awareness of this data • Lack of a forum for consumer feedback	• Standardize public reporting practices • Move away from providing "charge master" files • Make local comparisons available on a smaller geographic scale • Mandate the reporting of provider quality data • Create a team of experts to conduct a campaign for awareness • Mandate website owners to collect consumer satisfaction data

Some of these websites were downloadable spreadsheets that were hospital "charge masters." A charge master is a complete list of items that can be billed to a patient, hospital or insurance company. There is rarely a situation in which patients find themselves paying the price for a procedure or hospital stay listed on the charge master. This is a kind of "raw" data that do not work to serve patient needs. In other words, this kind of report would not be considered consumer centered. As seen in Box 8, the data made available to patients should be actionable. By this we mean that entities reporting costs should ideally aim to present costs for services that patients would actually face, i.e. out-of-pocket costs. While this would help diminish the asymmetry of information between patients and payers, the authors recognize this would be a significant challenge in reporting costs particular to each patient, as we cannot remove the uncertainty inherent in obtaining health care. A select few websites evaluated in this report separated costs for physician services and hospital services for a hospital admission. Assists consumers as they can match the cost with an actual service they were provided. Websites owned by health insurance companies have more flexibility in providing patient-specific or case-specific information, as their members would be able to enter their specific information. State departments of health may find this to be an obstacle as they will have to obtain this information from a third source and then determine the best way to report this to their residents.

Another limiting factor shown in Box 8 is the need for relevant comparisons. Many websites make comparisons to national and state benchmarks that allow the patient to assess where their provider or hospital fits in on the larger spectrum. Further, some websites reported comparisons to average or median Medicare payments that can also help patients determine the level of efficiency of their health care service. Websites that provide data on providers can build on their impact by providing more detailed comparisons between individual providers within a given geographic region. Consumers, more often than not, will be seeking cost information for non-urgent conditions and will benefit from local provider information. Again, the authors recognize that this level of individualized information poses many challenges and a database with that amount of detail would take time to build and disseminate.

One final piece of information missing on the websites, as highlighted in 8, is a place for patients, or consumers, to provide feedback regarding the "consumer-centeredness" of the websites. Creating a forum, on the website itself, where patients could communicate their needs and how the website can best meet those needs would facilitate the continuing improvement of this public reporting methodology. Patients would likely continue to visit the website if the developers adjusted their data to meet their consumers' needs, which would ultimately make a greater, visible impact. These online resources, excluding the semi-public websites, are freely available to any consumer who has access to a computer. However, it is not clear how the availability of this information is being advertised or the use of this information is being

promoted. Transparency in the health care system is one, if not the, key theme of the Affordable Care Act of 2010. In order for this data to have a tangible impact on patients, and the health care system overall, developers should focus on generating awareness that this data exists. As shown in Box 7, this limiting factor inhibits consumer use of this freely available data.

Implications for Research and Policy

Moving forward, the developers of these websites should be sure to report quality data alongside cost data as highlighted in Box 9. As mentioned before, the lack of this side-by-side comparison was a limitation of many of the websites in this database. In addition to reducing health care costs through price transparency, there is a push towards the provision of efficient care. Providing this information simultaneously could remind patients to seek care that would provide them the most "bang for the buck." It could motivate patients to seek health care in the most appropriate environment avoiding unnecessary emergency room visits and unnecessarily high medical bills. Finally, the highest-scoring websites, on the consumer-centeredness ratings, can serve as a guide to future developers on how to best build and present their databases.

Box 9: Implications for Future Research & Policy

Implications for research:	Implications for Policy:
• Prioritize research agenda to determine effectiveness of publicly-reported cost data	• Report both quality and cost data to motivate efficient health care
• Determine best ways for institutions and associations to collect cost data	• Use previously developed public reporting models to motivate future dissemination
• Assess effectiveness of data dissemination methodologies for state departments of health	• Determine national and state roles in implementing public reporting policy

The public reporting of cost data can be viewed as an intervention like any other health policy intervention. Measuring the effect of the availability of this data on patient outcomes and cost containment in the overall health care system should be the focus of future research in this area. Health services researchers could examine trends over time as more of this publicly reported data becomes available to consumers. Researchers will have to pinpoint how much of a change in financial or physical burden on patients is driven by the actual use of this data. It would be extremely difficult to measure and a standardized mechanism for collecting this data would take time to develop but should be a priority on the future research agenda. As highlighted in Box 9, further research into how this data is collected from hospitals and providers is also a key next step. This would remove the option for hospitals to post their charge masters on their websites for patients to decipher.

If shown to be successful in creating a more informed "patient-consumer," policy could be enacted at both the federal and state level in order to enforce public reporting of cost data. The Centers for Medicare and Medicaid already has implemented a Physician Quality Reporting System. This could serve as a model for how to disseminate cost information at the federal level. Many state level cost-reporting models, disseminated by various departments of health, also exist as determined by the website review conducted in this report. These could serve as guides for states that do not have a statewide reporting system.

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Appendix A: Targeted literature review

The targeted literature review about the public reporting of costs is the primary source of data for this study. A targeted review is a type of narrative review that includes a synthesis of both qualitative and quantitative research on cost reporting (Dixon-Woods et al, 2005). This differs from the website review described elsewhere in this technical brief. We included key articles identified by experts (Dudley et al.,2010; Bardach et al.,2011; AFFQ 2011), as well as those identified from a search of electronic databases of published literature. We used the literature review to alert us to public websites reporting cost data (GQ 1), to clarify definitions and criteria to assess the consumer-centeredness of websites (GQ 2), and to provide an overview of the intended and unintended consequences of consumers' use of public-reported cost data on health care providers and facilities (GQ 3).

We developed a search strategy for MEDLINE, accessed via PubMed®, based on an analysis of the medical subject headings (MeSH) terms, and text words of relevant articles (Box A1). This strategy was translated for use in the other electronic sources. We searched the following databases for primary studies published from 2009 to 2013: MEDLINE®, EconLit, and Scopus.

Box A1: Search String
PubMed ((“public report” [tiab] OR “public reports”[tiab] OR “cost report”[tiab] OR “cost reports”[tiab] OR “report card”[tiab] OR “report cards”[tiab] OR “provider profiling”[tiab] OR “provider profile”[tiab] OR “provider profiles”[tiab]OR “score card”[tiab] OR “score cards”[tiab] OR “cost transparency”[tiab] OR “price transparency“[tiab] OR “pay for performance”[tiab] OR “public performance reports”[tiab] OR “consumer report”[tiab] OR “consumer reports”[tiab])) AND ((cost[mh] OR cost[tiab] OR charge[tiab] OR price[tiab] or utilization[tiab] OR spending[tiab] OR efficiency[tiab])) Filters: Publication date from 2009/01/01 to 2013/12/31; English
Scopus (((TITLE-ABS-KEY("public report") OR TITLE-ABS-KEY("public reports") OR TITLE-ABS-KEY("cost report") OR TITLE-ABS-KEY("cost reports") OR TITLE-ABS-KEY("report cards") OR TITLE-ABS-KEY("report card") OR TITLE-ABS-KEY("provider profiling") OR TITLE-ABS-KEY("provider profile") OR TITLE-ABS-KEY("provider profiles") OR TITLE-ABS-KEY("score card") OR TITLE-ABS-KEY("score cards") OR TITLE-ABS-KEY("cost transparency") OR TITLE-ABS-KEY("price transparency") OR TITLE-ABS-KEY("pay for performance") OR TITLE-ABS-KEY("public performance reports") OR TITLE-ABS-KEY("consumer report") OR TITLE-ABS-KEY("consumer reports"))) AND ((TITLE-ABS-KEY(cost) OR TITLE-ABS-KEY(charge) OR TITLE-ABS-KEY(price) OR TITLE-ABS-KEY(utilization) OR TITLE-ABS-KEY(spending) OR TITLE-ABS-KEY(efficiency)))) AND (TITLE-ABS-KEY("health care") OR TITLE-ABS-KEY("healthcare")) AND (LIMIT-TO(LANGUAGE, "English")) AND (LIMIT-TO(PUBYEAR, 2013) OR LIMIT-TO(PUBYEAR, 2012) OR LIMIT-TO(PUBYEAR, 2011) OR LIMIT-TO(PUBYEAR, 2010) OR LIMIT-TO(PUBYEAR, 2009))
Econlit (TX “public report” OR TX “public reports” OR TX“cost report” OR TX “cost reports” OR TX “report card” OR TX “report cards” OR TX “provider profiling” OR TX "provider profile" OR TX "provider profiles" OR TX “score card” OR TX “score cards” OR TX “cost transparency” OR TX “price transparency“ OR TX “pay for performance” OR TX “public performance reports” OR TX “consumer report” OR TX “consumer reports”) AND (TX cost OR TX charge OR TX price OR TX utilization OR TX spending OR TX efficiency) AND (TX "healthcare" OR TX " health care") Limiters - Published Date: 20090101-20131231

For inclusion in this review, we required that articles be published after 2009, address public reporting of cost data in US health care, and inform one or more of the guiding questions. Four trained reviewers independently screened articles at the title and abstract level. Reviewers were paired; if both reviewers agreed that an article met one or more of the exclusion criteria, it was excluded (Box A2). Paired reviewers also conducted a second independent review of the full text of the articles for all citations that were promoted on the basis of title and abstract.

Box A2: Inclusion and exclusion criteria for the targeted literature review

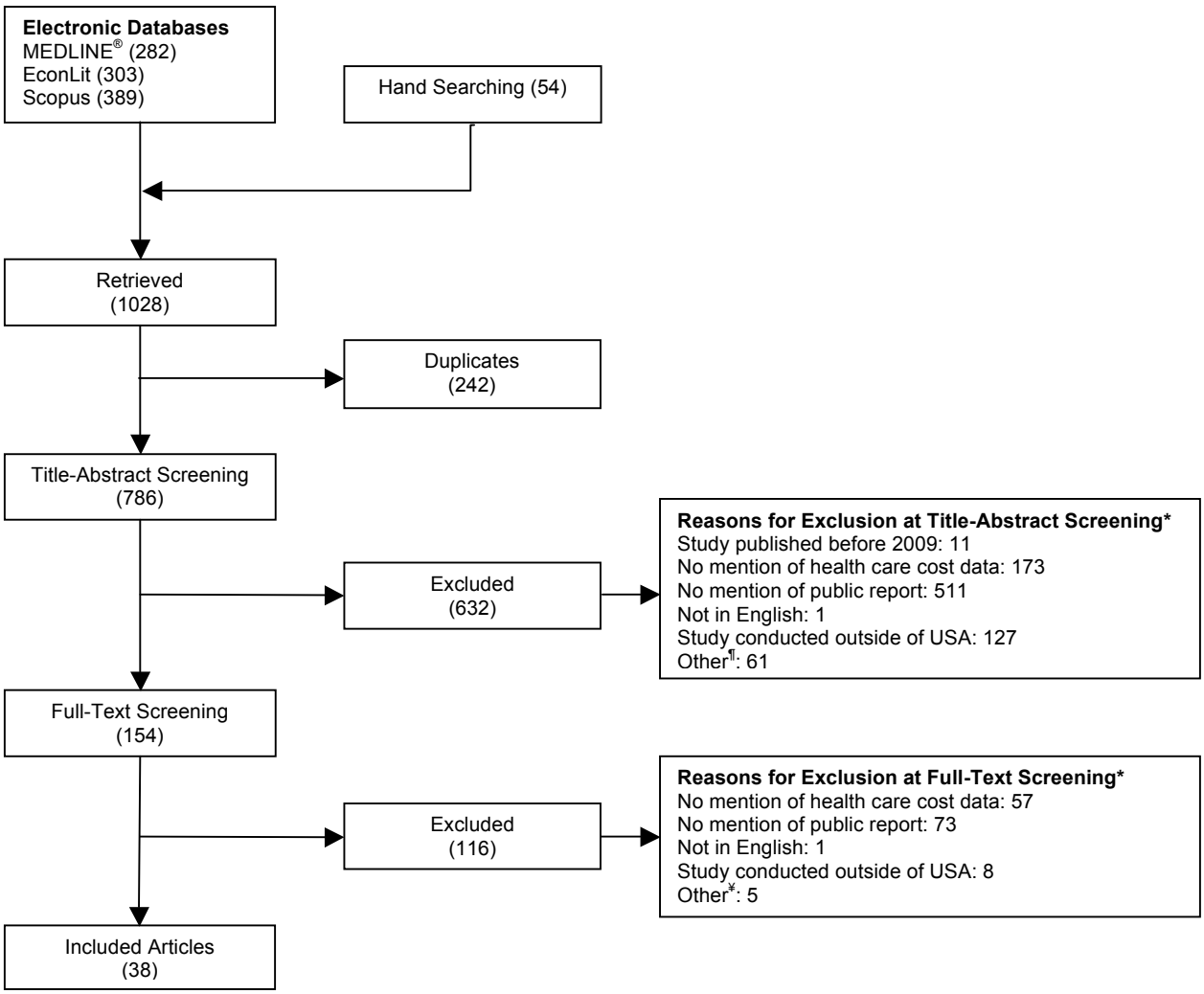
Review Stage	Include	Exclude
Title/Abstract level	✓ Study published after 2009 ✓ Public reports of cost data in health care in the US	• No mention of health care cost data • No mention of public reporting • Not in English • Study conducted outside of US
Full article level	✓ Public reports of cost data in health care in the US ✓ Address one or more guiding questions	• No mention of health care cost data • No mention of public report • Not in English • Study conducted outside of US

Included articles were read in full by at least two reviewers (ZB and TK or NN) who summarized the information from the articles that answered the three GQs. The intent was to present a summary of the approaches which illuminate the GQs. The methods used here are consistent with generally recognized standards for the conduct of narrative reviews: they are meant to provide a balanced overview, summarize the main findings of the most important contributions to the literature, make reference to supporting theory and assumptions, and provide support for further quantitative review (Gasparyan et al., 2011). Key information was summarized in tables and described in a narrative.

The database search yielded 974 titles, supplemented by 54 titles in the hand search. Of these, 786, advanced to the title/abstract review stage, and 154 advanced to the full-text screening. Thirty eight articles were retained for the targeted review. For full details of inclusion and exclusion, see Figure 1, which provides details on reasons for inclusion and exclusion and number of articles examined at each stage.

Most articles (66%) addressed more than one GQ; 21 addressed measures of costs that have been publically reported (GQ1) , 23 addressed the consumer-centeredness of the measures of cost (GQ2), and 27 addressed consequences of public reporting of costs (GQ3). Table A presents characteristics of the included articles. Twenty-one were original research in peer-reviewed publications, while 7 were commentaries, 6 were organizational reports, 1 was a governmental report, and the remainder were news pieces (N=3).

Figure 1: Summary of Targeted Literature



* Total exceeds the number of citations in the exclusion box, because citations could be excluded for more than one reason
¶Other reasons for exclusion at title-abstract screening phase: no focus on consumers or healthcare, no individual provider level data, pharma related article
¥Other reasons for exclusion at full-text screening phase: health policy review, book review, not relevant to research questions, no focus on consumers

Table A: Included articles for the targeted literature review by guiding questions (GQ)					
Author, year	**Journal or Publication names**	**Type of Study**	**GQ1**	**GQ2**	**GQ3**
Kullgren, 2013	JAMA	Original Research	X		
Samper, 2013	Journal of Consumer Research	Original Research			X
Harvey, 2013	Journal of Vascular Interventional Radiology	Commentary			X
Reinhardt, 2013	JAMA	Commentary		X	X
Adamopoulos, 2013	Becker's Hospital Review	News		X	
Yegian, 2013	Health Affairs	Original Research		X	X
Robinson, 2013	Health Affairs	Original Research	X		X
NCSL, 2013	National conference of state legislatures	Organizational report	X		X
Wall, 2013	IBJ (Indianapolis Business Journal)	News	X		
Friedberg, 2012	Health Affairs	Original Research			X
Sinaiko, 2012	Health Affairs	Original Research		X	X
Luft, 2012	Health Affairs	Commentary	X	X	
Hibbard, 2012	Health Affairs	Original Research		X	X
Mehrotra, 2012	Health Affairs	Original Research		X	X
Aligning Forces for quality, 2012	Robert Wood Johnson Foundation	Organizational report	X	X	X
Young, 2012	Health Affairs	Original Research	X		
James, 2012	Health Affairs	Commentary	X	X	X
NYTimes.com, 2012	New York Times	News	X	X	
Fang, 2011	Journal of Economic Analysis & Policy	Original Research			X
Sinaiko, 2011	The New England Journal of Medicine	Commentary	X		X
Park, 2011	Health Services Research	Original Research	X		X
Sofaer, 2011	School of Public Affairs, Baruch College	Commentary		X	X
Report to congressional requesters, 2011	Report	Governmental report	X	X	X
Sinaiko, 2011	Health Services Research	Original Research		X	X
Dudley, 2011	AHRQ	Original Research	X	X	
Aligning Forces for quality, 2011	Robert Wood Johnson Foundation	Organizational report	X	X	
Sick, 2011	American Journal of Medical Quality	Original Research	X	X	X
Bardach , 2011	AHRQ	Original Research	X	X	X
Farrell, 2010	Journal of General Internal Medicine	Original Research			X
Barlas, 2010	Pharmacy and Therapeutics Community	Original Research		X	X
Christianson, 2010	J Gen Intern Med	Original Research	X	X	X
Swartz, 2010	Robert Wood Johnson Foundation	Organizational report	X	X	X
Kaiser health news, 2010	Kaiser Health News	News		X	X
O'Neil, 2010	Mathematica report	Original Research	X		
Adams, 2010	RAND – technical report	Original Research			X
Mehrotra, 2010	Annals of Internal Medicine	Original Research	X		
Tu, 2009	Issue Brief Center for the Study Health System Change	Organizational report	X	X	X
Catalyst for payment reform, 2012	Catalyst for payment reform	Organizational report		X	

GQ 1: What measures of costs about health care providers and facilities have been publicly reported? GQ 2: Are the reported measures of costs consumer-centered? GQ 3: What are the intended and unintended consequences of consumers' use of public-reported cost data?

Appendix B: List of websites reviewed

#	Websites	Sources	Decision
1.	http://64.64.16.103/wp-content/uploads/2012/09/hospital-cost-report-january-2011-final.pdf	IPI	Excluded
2.	http://adph.org/hai/	RWJF	Excluded
3.	http://afh.org/	Mathematica	Excluded
4.	http://ahq.ipro.org/	RWJF	Excluded
5.	http://betterhealthcleveland.org/	Mathematica	Excluded
6.	http://c354183.r83.cf1.rackcdn.com/MHQP%20Consumer%20Reports%20Insert%202012.pdf	RWJF	Excluded
7.	http://chia.unlv.edu/nevadahealthchoices/html/nevadahealthchoices.htm	RWJF	Excluded
8.	http://clearhealthcosts.com/	IPI	Included
9.	http://communityhealthalliance.org/	Mathematica	Excluded
10.	http://dhss.delaware.gov/dhss/dph/epi/dehospinfrpts.html	RWJF	Excluded
11.	http://epi.publichealth.nc.gov/cd/hai/figures.html	RWJF	Excluded
12.	http://forces4quality.org/alliance/greater-boston#twitter	Mathematica	Excluded
13.	http://gateway.maine.gov/MHDO/healthcost/	RWJF, IPI	Included
14.	http://gateway.maine.gov/mhdo/monahrq/index.html	RWJF	Included
15.	http://gis.oshpd.ca.gov/atlas/	RWJF, Mathematica	Included
16.	http://hcqcc.hcf.state.ma.us/	RWJF, Mathematica	Included
17.	http://health.mo.gov/data/hai/drive_noso.php	RWJF	Excluded
18.	http://health.state.tn.us/Ceds/HAI/index.htm	RWJF	Excluded
19.	http://health.state.tn.us/statistics/specialprojects.htm#hdds	Journal	Excluded
20.	http://health.utah.gov/hda/report/inpatient.php	RWJF	Included
21.	http://healthcarequalitymatters.org/?p=fqc	RWJF	Included
22.	http://healthinsight.org/rankings/hospitals	RWJF, Mathematica	Excluded
23.	http://hospitals.nyhealth.gov/	RWJF	Excluded
24.	http://iha.ncqa.org/reportcard/	RWJF	Excluded
25.	http://info.kyha.com/QualityData/	RWJF	Excluded
26.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/cost_report.html	RWJF	Excluded
27.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/reports/facility_comparison/index.asp?currentStatus=H	RWJF	Excluded
28.	http://mhcc.maryland.gov/consumerinfo/hospitalguide/hospital_guide/reports/healthcare_associated_infections/index.asp?currentStatus=H	RWJF, Mathematica, IPI	Excluded
29.	http://mncm.org/reports-and-websites/reports-and-data/	RWJF, Mathematica	Excluded
30.	http://mnhealthactiongroup.org/	Mathematica	Excluded
31.	http://morxcompare.mo.gov/	Journal	Excluded
32.	http://mycarecompare.org/	Mathematica	Included
33.	http://myvbch.org/about-vbch/services/report-cards/	RWJF	Excluded
34.	http://nevadacomparecare.net/	RWJF	Excluded
35.	http://nhhealthcost.usnh.edu/	Journal	Included
36.	http://nmhealth.org/HAI/plans_reports.shtml	RWJF	Excluded
37.	http://nvpricepoint.net/	RWJF	Included
38.	http://ohiohospitalcompare.ohio.gov/	RWJF	Included
39.	http://oregonpatientsafety.org/reporting-programs/	RWJF	Excluded
40.	http://p2quality.com/hospitalReporting.php	RWJF	Excluded
41.	http://provider.bcbs.com/#tab-1-content	RWJF	Excluded
42.	http://pub.azdhs.gov/hospital-discharge-stats/2011/index.html	RWJF	Included
43.	http://public.hcsc.net/providerfinder/home.do?corpEntCd=NM1	IPI	Excluded
44.	http://public.health.oregon.gov/DiseasesConditions/CommunicableDisease/HAI/Pages/index.aspx	RWJF	Excluded

#	Websites	Sources	Decision
45.	http://publicapps.odh.ohio.gov/facilityinformation/	RWJF, Mathematica	Excluded
46.	http://recognition.ncqa.org/	RWJF	Excluded
47.	http://reportcard.opa.ca.gov/rc2013/	RWJF	Excluded
48.	http://reportcard.opa.ca.gov/rc2013/medicalgroupcounty.aspx	RWJF	Excluded
49.	http://rx4excellence.org/getInformed/performanceMeasures/index.php	RWJF	Excluded
50.	http://the-collaborative.org/	Mathematica	Excluded
51.	http://tnhospitalsinform.com/	IPI	Excluded
52.	http://utahhealthscape.org/	RWJF	Excluded
53.	http://utpricepoint.org/	RWJF, IPI	Included
54.	http://web.doh.state.nj.us/apps2/hpr/	RWJF, Mathematica	Excluded
55.	http://whynotthebest.org/	RWJF	Included
56.	http://www.abouthealthsatisfaction.org/	RWJF	Excluded
57.	http://www.abqhealthcarequality.org/	RWJF	Excluded
58.	http://www.aetna.com/docfind/home.do	Journal	Excluded
59.	http://www.ahd.com/freesearch.php	RWJF	Included
60.	http://www.aligning4healthpa.org/	RWJF, Mathematica	Included
61.	http://www.aligningforceshumboldt.org/find_quality_care.php	RWJF	Included
62.	http://www.anthem.com/wps/portal/ahpmember?content_path=shared/va/f1/s0/t0/pw_ad087638.htm&state=va&rootLevel=0&label=Performance%20report%20catalog	RWJF	Excluded
63.	http://www.azdhs.gov/plan/crr/cr/hospitals.htm#CostComparison	RWJF, IPI	Included
64.	http://www.bcbst.com/tools/hospital-quality/service.do	RWJF	Excluded
65.	http://www.betterhealthcleveland.org/Community-Health-Checkup.aspx	RWJF	Excluded
66.	http://www.calhospitalcompare.org/?v=2	RWJF, Mathematica, journal	Excluded
67.	http://www.carechex.com/Default.aspx	RWJF	Excluded
68.	http://www.cbghealth.org/cbgh/?LinkServID=E1A62B2B-C267-A10F-ABAECC91AD53EA8A&showMeta=0	RWJF	Excluded
69.	http://www.cchri.org/reports/physician_organizations.html	RWJF, Mathematica,	Excluded
70.	http://www.cdph.ca.gov/programs/hai/Pages/HealthcareAssociatedInfections.aspx	RWJF	Excluded
71.	http://www.centralindianaallianceforhealth.org/reports/	RWJF	Excluded
72.	http://www.cha.com/CHA/Resources/Colorado_Hospital_Report_Card/CHA/_Resources/Colorado_Hospital_Report_Card.aspx?hkey=a513e409-4b71-4eee-bbf6-1440067be285	Mathematica	Excluded
73.	http://www.cha.com/pdfs/Discharge_Data/2010ChgRptnop.pdf	RWJF	Excluded
74.	http://www.chaboard.com/prices/index.html	IPI	Excluded
75.	http://www.chd.dphe.state.co.us/topics.aspx?q=Health_Facility_Acquired_Infections	RWJF	Excluded
76.	http://www.checkbook.org/patientcentral/?cb=cbgh	RWJF	Excluded
77.	http://www.chiaunlv.com/Reports/HealthChoices.php	IPI	Included
78.	http://www.cigna.com/web/public/hcpdirectory/	RWJF	Excluded
79.	http://www.cimronebraska.org/Home/datamaps/nedata.aspx	RWJF	Excluded
80.	http://www.coap.org/for-the-public	RWJF	Excluded
81.	http://www.cohospitalprices.org/hprices/index.php	RWJF, IPI	Included
82.	http://www.cohospitalquality.org/	RWJF	Excluded
83.	http://www.coloradohealthonline.org/cbgh/?LinkServID=6AEFBCC8-9D88-398C-72AE3FB8ECF47B50&showMeta=0	RWJF, Mathematica,	Excluded
84.	http://www.comparecarewv.gov/	IPI	Excluded
85.	http://www.comparecarewv.gov/index.aspx	RWJF	Included
86.	http://www.ct.gov/dph/cwp/view.asp?a=3132&q=388090	RWJF	Excluded

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87.	http://www.cthosp.org/advocacy/quality-and-patient-safety/hospital-quality-reporting-website/	RWJF	Excluded
88.	http://www.dads.state.tx.us/	Mathematica	Excluded
89.	http://www.dartmouthatlas.org/	RWJF, Mathematica,	Excluded
90.	http://www.dfr.vermont.gov/	RWJF, Mathematica, IPI	Included
91.	http://www.dhhs.nh.gov/dphs/cdcs/hai/documents/hai2011.pdf	RWJF	Excluded
92.	http://www.drscore.com/	Mathematica	Excluded
93.	http://www.dshs.state.tx.us/thcic/	RWJF, Mathematica,	Excluded
94.	http://www.ehpco.com/consumer_guide.html		
95.	http://www.floridahealthfinder.gov/CompareCare/SelectChoice.aspx	RWJF, Mathematica,	Included
96.	http://www.floridahealthfinder.gov/LandingPages/NursingHomeGuide.aspx	RWJF, Mathematica,	Included
97.	http://www.gdaha.org/resource-center/gdaha-publications	RWJF	Excluded
98.	http://www.getbettermaine.org/	RWJF, Mathematica,	Excluded
99.	http://www.hci3.org/	RWJF, Mathematica,	Excluded
100.	http://www.health.ny.gov/statistics/facilities/hospital/hospital_acquired_infections/	RWJF	Excluded
101.	http://www.health.ri.gov/data/hospitalcareoutcomes/index.php	RWJF, Mathematica,	Excluded
102.	http://www.health.ri.gov/publications/generalassemblyreports/2011HealthCareQualityPerformanceProgramAnnualReport.pdf	RWJF, Mathematica,	Excluded
103.	http://www.health.ri.gov/publications/qualityreports/hospitals/PatientSatisfactionResults.pdf	RWJF, Mathematica,	Excluded
104.	http://www.health.state.mn.us/healthreform/measurement/report/index.html#one	RWJF	Excluded
105.	http://www.health.state.mn.us/patientsafety/adverseselect.cfm	RWJF	Excluded
106.	http://www.health.state.ny.us/statistics/diseases/cardiovascular/	RWJF	Excluded
107.	http://www.health.state.ok.us/stats/index.shtml	RWJF	Excluded
108.	http://www.health.utah.gov/epi/HAI/CLABSIdata.html	RWJF	Excluded
109.	http://www.healthcarereportcard.illinois.gov/	RWJF, Mathematica,	Included
110.	http://www.healthfinderla.gov/CQHospitals.aspx	RWJF	Excluded
111.	http://www.healthgrades.com/	RWJF, Mathematica,	Excluded
112.	http://www.healthpartners.com/portal/145.html		Excluded
113.	http://www.healthymemphis.org/	Mathematica	Excluded
114.	http://www.heart.org/HEARTORG/HealthcareResearch/GetWithTheGuidelinesHFStroke/GetWithTheGuidelinesHeartFailureHomePage/Recognition-from-Get-With-The-Guidelines-Heart-Failure_UCM_307818_Article.jsp	RWJF	Excluded
115.	http://www.heart.org/HEARTORG/HealthcareResearch/GetWithTheGuidelinesHFStroke/GetWithTheGuidelinesStrokeHomePage/Recognition-from-Get-With-The-Guidelines-Stroke_UCM_308034_Article.jsp	RWJF	Excluded
116.	http://www.hhicpublicreports.org/	RWJF	Excluded
117.	http://www.hospitalcompare.va.gov/apps/Compare/index.asp	RWJF	Excluded
118.	http://www.hospitalconsumerassist.com/search.htm	RWJF, Journal,	Included
119.	http://www.hospitalsafetyscore.org/licensure-and-permissions	RWJF	Excluded

#	Websites	Sources	Decision
120.	http://www.iha.org/	Mathematica	Excluded
121.	http://www.ihconline.org/aspx/publicreporting/iowareport.aspx	RWJF, Mathematica,	Excluded
122.	http://www.ihie.org/public-reporting	RWJF	Excluded
123.	http://www.in.gov/isdh/23433.htm	RWJF	Excluded
124.	http://www.in.gov/isdh/reports/QAMIS/hosrpt/index.htm	RWJF	Excluded
125.	http://www.iowahospitalcharges.com/	RWJF, Journal. IPI	Included
126.	http://www.kaiserhealthnews.org/Stories/2012/April/18/community-health-center-chart.aspx	RWJF	Excluded
127.	http://www.kcqic.org/	Mathematica	Excluded
128.	http://www.lahealthinform.org/	RWJF	Included
129.	http://www.leapfroggroup.org/	RWJF, Mathematica,	Excluded
130.	http://www.lhcqf.org/	Mathematica	Excluded
131.	http://www.ltcohio.org/consumer/index.asp	Mathematica	Excluded
132.	http://www.maine.gov/dhhs/mecdc/infectious-disease/hai/reports.shtml	RWJF	Excluded
133.	http://www.mass.gov/eohhs/gov/departments/dph/programs/hcq/healthcare-quality/health-care-facilities/hospitals/healthcare-assoc-infections/healthcare-associated-infections-reports.html	RWJF	Excluded
134.	http://www.medicare.gov/hospitalcompare/search.html	RWJF	Excluded
135.	http://www.medicare.gov/nursinghomecompare/search.html	Mathematica	Excluded
136.	http://www.mehmc.org/member-resources/publications/advanced-primary-care/	RWJF	Excluded
137.	http://www.mhakeystonecenter.org/compare.htm	RWJF	Included
138.	http://www.mhaonline.org/quality/quality-performance-measures/quality-performance-measures	RWJF	Excluded
139.	http://www.mhqp.org/quality/whatisquality.asp?nav=030000	RWJF, Mathematica,	Excluded
140.	http://www.michigandrugprices.com/	Journal	Excluded
141.	http://www.mihealthandsafety.org/2006_consumer/index.html	RWJF, Mathematica,	Excluded
142.	http://www.missourihealthmatters.com/hospital-quality/	RWJF	Excluded
143.	http://www.mnhealthscores.org/	RWJF	Included
144.	http://www.mnhospitalpricecheck.org/	RWJF	Included
145.	http://www.mnhospitalquality.org/	RWJF	Excluded
146.	http://www.montanapricepoint.org/	RWJF, Mathematica IPI,	Included
147.	http://www.mqf-online.com/summary/map.aspx	RWJF	Excluded
148.	http://www.mvphealthcare.com/provider/provider-metrics-2010.html	RWJF	Excluded
149.	http://www.mycarecompare.org/	RWJF	Excluded
150.	http://www.myfloridarx.com/	Journal	Excluded
151.	http://www.myhealthfinder.com/	RWJF	Excluded
152.	http://www.myschospital.org/reports_step1.aspx	RWJF	Excluded
153.	http://www.nchospitalquality.org/	RWJF	Excluded
154.	http://www.ncqa.org/tabid/631/default.aspx	Mathematica	Excluded
155.	http://www.ndhealth.gov/hf/pubs/NursingFacilityCharges/2011.pdf	Journal	Included
156.	http://www.nerdwallet.com/	KI	Excluded
157.	http://www.nevadacomparecare.net/	Journal	Included
158.	http://www.nhacarecompare.com/	RWJF, IPI	Included
159.	http://www.nhhealthcost.org/costByProcedure.aspx	RWJF, Mathematica, IPI	Excluded
160.	http://www.nhpghscorecard.org/disclaimer.cfm?redirect=hospitalratings	RWJF, Mathematica	Excluded
161.	http://www.nhqualitycare.org/	RWJF	Excluded

#	Websites	Sources	Decision
162.	http://www.njhcqi.org/index.php/resource-center/reports/18-new-jersey-hospital-price-transparency-report.html	RWJF, IPI	Included
163.	http://www.njhospitalcarecompare.com/index.aspx	RWJF	Included
164.	http://www.njhospitalpricecompare.com/	RWJF, IPI, Journal	Excluded
165.	http://www.nmhanet.org/	Mathematica	Excluded
166.	http://www.nortonhealthcare.com/	Mathematica	Excluded
167.	http://www.nursinghomeguide.org/NHG/nhg_txt_home.lasso	Mathematica	Excluded
168.	http://www.nvhospitalquality.net/	RWJF	Excluded
169.	http://www.nyc.gov/html/hhc/infocus/html/home/performance_landing.shtml	RWJF	Excluded
170.	http://www.oahhs.org/patient-services/price-point.html	Journal	Excluded
171.	http://www.ok.gov/health/documents/08%20Hospital%20AR.pdf	RWJF	Excluded
172.	http://www.ok.gov/health/Protective_Health/Medical_Facilities_Service/Facility_Services_Division/Hospital_Annual_Report/	RWJF	Excluded
173.	http://www.ok.gov/health/Protective_Health/Medical_Facilities_Service/Facility_Services_Division/Hospital_Annual_Report/	RWJF	Excluded
174.	http://www.okhca.org/	Mathematica	Excluded
175.	http://www.okhospitalpricing.org/Default.aspx	RWJF	Excluded
176.	http://www.okhospitalquality.org/reports_step1.aspx	RWJF	Excluded
177.	http://www.opa.ca.gov/Pages/Home.aspx	Mathematica	Excluded
178.	http://www.oregon.gov/OHA/OHPR/docs/HCAIAC/Reports/Dec2010_Report/Final_Report.pdf?ga=t	RWJF, Mathematica	Excluded
179.	http://www.oregon.gov/OHA/OHPR/RSCH/comparehospitalcosts.shtml	RWJF	Excluded
180.	http://www.oregon.gov/oha/OHPR/RSCH/docs/Hospital_Report/Hospital_Report_2011.pdf	RWJF	Excluded
181.	http://www.orhospitalquality.org/	RWJF	Excluded
182.	http://www.orpricepoint.org/	RWJF	Included
183.	http://www.oshpd.ca.gov/Chargemaster/	RWJF	Included
184.	http://www.oshpd.ca.gov/commonsurgery/Default.aspx	RWJF, IPI	Excluded
185.	http://www.oshpd.ca.gov/HID/DataFlow/HospQuality.html	RWJF	Excluded
186.	http://www.oshpd.ca.gov/HID/Products/Clinical_Data/CABG/10Breakdown.html	RWJF	Excluded
187.	http://www.pacificmedicalcenters.org/index.php/about-us/quality-innovations/	Mathematica	Excluded
188.	http://www.partnerforqualitycare.org/	RWJF	Excluded
189.	http://www.patientcarelink.org/hospital-data/performance-measures.aspx	RWJF	Excluded
190.	http://www.patientchoicehealthcare.com/ins/PCInsights_HospGde_2011.pdf	RWJF	Included
191.	http://www.patientchoicesignature.com/aboutpcs/consumersurvey.html	RWJF	Excluded
192.	http://www.pbgh.org/	Mathematica	Excluded
193.	http://www.pbghpa.com/	Mathematica	Excluded
194.	http://www.phc4.org/hpr/	RWJF, Mathematica	Included
195.	http://www.phc4.org/medicarepayments/Search.aspx	RWJF, Mathematica, IPI	Excluded
196.	http://www.phcqa.org/	RWJF	Excluded
197.	http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234/hai_annual_reports/1403644	RWJF	Excluded
198.	http://www.q-corp.org/	Mathematica	Excluded
199.	http://www.qqhc.com/	Mathematica	Excluded
200.	http://www.qualitycheck.org	RWJF, Mathematica	Excluded
201.	http://www.qualityhealthtogether.org/find_quality_care.php	RWJF	Excluded
202.	http://www.qualityquest.org/quality-reports/	RWJF	Excluded

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203.	http://www.rethinkhealthy.org/	RWJF	Excluded
204.	http://www.rx4excellence.org/diabetesPhysicians/index.php	RWJF	Excluded
205.	http://www.savannahbusinessgroup.com/	Mathematica	Excluded
206.	http://www.scbch.org/hospital-quality-guide/	RWJF	Excluded
207.	http://www.scdhec.gov/health/disease/hai/individual_041612.htm	RWJF	Excluded
208.	http://www.sdhospitalquality.org/search.php	RWJF	Excluded
209.	http://www.sdpricepoint.org/	RWJF, IPI	Included
210.	http://www.state.nj.us/health/healthcarequality/	RWJF	Excluded
211.	http://www.stlbhc.org/healthcare.aspx	RWJF	Excluded
212.	http://www.stlbhc.org/healthcare.aspx	RWJF	Excluded
213.	http://www.sts.org/quality-research-patient-safety/sts-public-reporting-online	RWJF	Excluded
214.	http://www.tnhospitalsinform.com/reporting.aspx	RWJF	Included
215.	http://www.txpricepoint.org/consumer.aspx	RWJF	Included
216.	http://www.ucomparehealthcare.com/	RWJF, Mathematica	Included
217.	http://www.uhc.com/find_a_physician.htm	RWJF, Mathematica	Excluded
218.	http://www.uhc.com/individuals_families/member_tools/myhealthcare_cost_estimator.htm	Journal	Excluded
219.	http://www.uhc.com/physicians/care_programs/unitedhealth_premium_designation.htm	Journal	Excluded
220.	http://www.usnews.com/	Mathematica	Excluded
221.	http://www.utcheckpoint.org/reports_step1.aspx	RWJF	Excluded
222.	http://www.va.gov/HEALTH/docs/2012_VHA_Facility_Quality_and_Safety_Report_FINAL508.pdf	RWJF	Excluded
223.	http://www.vapricepoint.org/	RWJF	Included
224.	http://www.vhha.com/qualityscorecard.html	RWJF	Excluded
225.	http://www.vhi.org/healthcare.asp	RWJF, Mathematica	Included
226.	http://www.vhi.org/hospitals.asp	RWJF, Mathematica	Excluded
227.	http://www.vhi.org/outpatient_compare.asp	RWJF, Mathematica	Included
228.	http://www.vhi.org/physicians.asp	RWJF, Mathematica	Included
229.	http://www.vimo.com/hospital/browseprocedures.php	RWJF	Excluded
230.	http://www.vitals.com/	Journal	Excluded
231.	http://www.wacommunitycheckup.org/?p=viewreports&orgname=all&county=All+Counties	RWJF, Mathematica	Excluded
232.	http://www.wahospitalpricing.org/	RWJF	Included
233.	http://www.wahospitalquality.org/	RWJF	Excluded
234.	http://www.wbchc.com/resources/resources.htm	RWJF, Mathematica	Excluded
235.	http://www.wchq.org/reporting/	RWJF, Mathematica	Excluded
236.	http://www.whainfocenter.com/data_resources/2010_hcdr.htm	RWJF	Included
237.	http://www.whainfocenter.com/data_resources/2011WIInpatientQIRelease.pdf	RWJF	Excluded
238.	http://www.wheretofindcare.com/default.aspx	RWJF	Excluded
239.	http://www.wicheckpoint.org/reports_step1.aspx	RWJF	Excluded
240.	http://www.wipricepoint.org/	RWJF, IPI	Included
241.	http://www.wisconsinhealthreports.org/data	RWJF	Excluded
242.	http://www4.cbs.state.or.us/ex/ins/hit/	IPI	Excluded
243.	http://wyopricepoint.com/	RWJF, IPI	Included
244.	http://yourhealthmatters.org/	RWJF	Excluded
245.	https://findadoctor.bluecrossma.com/	RWJF	Excluded
246.	https://health.data.ny.gov/Health/Hospital-Inpatient-Cost-Transparency-Beginning-200/7dtz-qxmr	IPI	Included
247.	https://health.utah.gov/myhealthcare/	RWJF, Mathematica	Included

#	Websites	Sources	Decision
248.	https://health.utah.gov/myhealthcare/hospital.htm	RWJF, Mathematica	Included
249.	https://health.utah.gov/myhealthcare/monahrq/index.html	Journal	Excluded
250.	https://health.utah.gov/myhealthcare/reports/hcahps/index.php?doc=2&mytabsmenu=3	RWJF	Excluded
251.	https://info.kyha.com/Pricing/MSDRG/SelectHospital.asp	RWJF	Included
252.	https://ltc.dph.illinois.gov/webapp/LTCApp/ltc.jsp	Journal	Included
253.	https://prd.chfs.ky.gov/MONAHRQ/2011/	RWJF, Journals	Excluded
254.	https://www.anthem.com/health-insurance/provider-directory/searchcriteria?qs=*bnlC7RuslFfU3qxduSJdoQ==&brand=abcbs	Journal	Excluded
255.	https://www.bcbsal.org/web/index.html	RWJF	Excluded
256.	https://www.bcbsri.com/about-us/improving-healthcare-delivery/hospital-quality-program	RWJF	Excluded
257.	https://www.blueshieldca.com/fap/app/search.html	RWJF	Excluded
258.	https://www.geoaccess.com/uhc/po/Default.asp	RWJF	Excluded
259.	https://www.harvardpilgrim.org/portal/page?_pageid=213,233601&_dad=portal&_schema=PORTAL	RWJF. Mathematica	Excluded
260.	https://www.health.ny.gov/	Mathematica	Excluded
261.	https://www.healthcarebluebook.com/	IPI	Excluded
262.	https://www.healthnet.com/portal/member/prvfinder/searchMedicalGroupsForm.do?category=DoctorSearch&topic=CompareMedicalGroups&region=CA	RWJF	Excluded
263.	https://www.medica.com/members#quality	RWJF	Excluded
264.	https://www.ncha.org/issues/finance/top-35-drgs	IPI	Included
265.	https://www.ncha.org/issues/finance/top-35-drgs	RWJF	Excluded
266.	https://www.phin.state.ok.us/ahrq/MONAHRQ%202010/index.html	RWJF	Excluded
267.	https://www.providerlookuponline.com/harvardpilgrim/po7/Search.aspx	RWJF	Excluded
268.	https://www.uhcwest.com/vgn/images/portal/cit_60701/600715339_PCA140967_004.pdf	RWJF, Mathematica	Excluded
269.	https://www.uhcwest.com/vgn/images/portal/cit_60701/600762581_PCA080402_009.pdf	RWJF, Mathematica	Excluded
270.	https://www6.state.nj.us/LPSCA_DRUG/index.jsp	Journal	Excluded

Appendix C: Characteristics of included websites

#	Owner	Setting	Type	Measure of cost	Year	Comparison	Consumerism					
							P	R	I	C	E	SUM
95	Florida Agency for Health Care Administration	Inpatient, outpatient	Dollar amount	Charge (range)	2012-2013	Hospital	2	3	1	2	3	11
228	Virginia Health Information	Inpatient	Symbols	Charges (average)	2012	Hospital	2	3	1	2	3	11
118	Arkansas Hospital Association	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	2	2	1	3	10
81	State of Colorado	Inpatient, outpatient	Dollar amount	Charges, reimbursements (average)	2011	Hospital	2	3	1	1	3	10
109	Illinois Department of Public Health	Inpatient, outpatient, emergency	Dollar Amount	Charge (median)	2011-2012	Hospital, state and national	2	3	1	1	3	10
125	Iowa Hospital Association	Inpatient, outpatient	Dollar Amount	Charges (average, median)	2012-2013	Hospital and state	2	3	1	1	3	10
146	Montana Hospital Association	Inpatient, outpatient	Dollar amount	Charges (average, median)	2012	Hospital, regional and state	2	3	1	1	3	10
158	Nebraska Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012-2013	Hospital, regional and state	2	3	1	1	3	10
37	Nevada hospital association	Inpatient, emergency	Dollar amount	Charges (average, median, range)	2012	Hospital, county and state	2	3	1	1	3	10
209	South Dakota Association of Healthcare Organizations	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital and state	2	3	1	1	3	10
53	Utah Hospitals & Health Systems Association	Inpatient	Dollar amount	Charges (average, median)	2011	Hospital, county and state	2	3	1	1	3	10
227	Virginia Health Information	Outpatient	Dollar amount	Charges (median)	2011	Hospital and state	2	3	0	2	3	10
223	Virginia Hospital & Healthcare Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, state and regional	2	3	1	1	3	10
232	Washington State Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, county and state	2	3	1	1	3	10
240	Wisconsin Hospital Association	Inpatient, outpatient, emergency	Dollar amount	Charges (average, median)	2012-2013	Hospital, county and state	2	3	1	1	3	10
236	Wisconsin Hospital Association Information Center	Inpatient, outpatient, emergency	Dollar amount	Charges (average, median), daily rate (average)	2012-2013	Hospitals, county and state	2	3	1	1	3	10
59	American Hospital Directory, Inc.	Inpatient, outpatient	Dollar amount	Charges and costs (average)	2012	Hospital	2	2	1	2	3	10
42	Arizona Department of Health Services	Inpatient, outpatient	Dollar amount	Charges, costs (average)	2011	Hospital, state and national	2	3	1	0	3	9
15	California State Government	Inpatient, outpatient	Dollar amount, symbols	Charges (average)	2012	Hospital and state	2	2	0	2	3	9
32	Greater Detroit Area Health Council	Inpatient, outpatient	Dollar amount	Payment (median)	2010-2011	Hospitals	2	3	1	0	3	9

#	Owner	Setting	Type	Measure of cost	Year	Comparison	Consumerism					
60	Healthy York County Coalition	Inpatient, emergency	Dollar amount	Charges (average)	2012	Hospital	2	1	1	2	3	9
13	Maine Health Data Organization	Inpatient, outpatient	Dollar amount	Charges (median), payments	2010	Hospital	2	3	0	1	3	9
143	State of Minnesota	Inpatient, outpatient	Dollar amount	Costs (average, median, range)	2011-2012	Hospital	2	2	0	2	3	9
38	Ohio Department of Health	Inpatient, outpatient	Dollar amount	Charges (average, median, range)	2010	Hospital	2	3	1	1	2	9
182	Oregon Association of Hospitals and Health Systems	Inpatient	Dollar amount	Charges (average, median)	2012-2013	Hospital, county and state	2	2	1	1	3	9
215	Texas Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2012	Hospital, county and state	2	2	1	1	3	9
248	Utah Department of Health	Inpatient	Dollar amount	Charges (average)	2011	Hospital, state, national	2	3	1	0	3	9
243	Wyoming Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2011-2012	Hospital, county and state	2	2	1	1	3	9
61	Aligning Forces Humboldt	Inpatient	Dollar amount	Payment (median)	2010-2011	Hospital	2	3	1	0	3	9
63	Arizona Dept. of Health Services	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	2	0	1	3	8
96	Florida Agency for Health Care Administration	Nursing home	Dollar amount	Daily rate	NA	Provider	1	2	0	2	3	8
251	Kentucky Hospital Association	Inpatient, outpatient	Dollar amount	Charges (median), price(range)	2012	Hospital and state	2	2	1	0	3	8
128	Louisiana Hospital Association	Inpatient, outpatient	Dollar amount	Charge (range)	2009	Hospitals	1	3	1	0	3	8
16	Commonwealth of Massachusetts	Inpatient, outpatient	Dollar amount, symbols	Costs (median, range)	NA	Hospital	1	3	1	1	2	8
21	Healthy Memphis Common Table	Inpatient, outpatient	Dollar amount	Payment (average)	2011-2012	Hospital	2	3	0	0	3	8
137	Michigan Health & Hospital Association	Inpatient, outpatient	Dollar amount	Charges, payment (average)	2011-2012	Hospital	2	2	0	1	3	8
144	Minnesota Hospital Association	Inpatient, outpatient	Dollar amount	Charges (average, median), daily rate (average)	2012	Hospital, regional and state	2	2	1	0	3	8
214	Tennessee Hospital Association	Inpatient	Dollar amount	Charges (average, median, range)	2010-2011	Hospital	2	1	1	1	3	8
55	The Commonwealth Fund	Inpatient	Dollar amount	Charges, payments (average)	2011	Hospital, state, national	2	2	1	1	2	8
35	The New Hampshire Insurance Department	Inpatient, outpatient	Dollar amount	Out-of-pocket, payments (insurance, combined)	NA	Provider	2	2	0	1	3	8
225	Virginia Health Information	Inpatient	Dollar amount	Charges, costs (average)	2011	Hospital, state, regional and national	2	2	1	0	3	8
190	Patient Choice (Medical), Wisconsin	Inpatient, outpatient	Dollar amount	Charges (median, range)	2011	Hospital	2	2	1	1	2	8
85	West Virginia Health Care Authority	Inpatient, outpatient	Dollar amount	Charges (average, total)	NA	Hospital	1	3	1	0	3	8

#	Owner	Setting	Type	Measure of cost	Year	Comparison	Consumerism					
247	Utah Hospital Association & Utah Department of Health	Inpatient, outpatient	Dollar amount	Charges (average, median)	2011	Hospitals, county, regional and state	2	2	1	0	3	8
8	Clear Health Costs	Inpatient, outpatient	Dollar amount	Costs (range)	NA	Hospital and provider	1	3	0	1	3	8
163	The New Jersey Hospital Association	Inpatient	Dollar amount	Charges (average, median)	2006	Hospital, county and state	1	2	1	1	2	7
246	New York State Department of Health	Inpatient, outpatient	Dollar amount	Charge, cost (average, median)	2011	Hospital	2	2	0	0	3	7
194	Pennsylvania Health Care Cost Containment Council	Inpatient	Dollar amount, symbols	Charges (average)	2009	Hospital	1	3	1	0	2	7
216	UCompare Holdings, LLC	Inpatient	Dollar amount	Payments (average)	NA	Hospital	0	2	1	2	2	7
77	University of Nevada & Center for Health Information Analysis	Inpatient, outpatient	Dollar amount	Billed charges (average)	2007-2011	Hospital	2	2	1	0	2	7
252	Illinois Department of Public Health	Nursing home	Dollar amount	Daily rate (average)	2006	Provider	1	2	0	1	2	6
14	State of Maine	Inpatient, outpatient	Dollar Amount	Costs (average)	2009	Hospitals	1	2	0	0	3	6
20	Utah Department of Health	Inpatient	Dollar amount	Charges (average)	2011	Hospital and state	2	2	1	0	1	6
157	Center for Health Information Analysis	Inpatient, outpatient	Dollar amount	Charges (total, average), daily rate (average)	2013	Hospitals	2	2	0	0	2	6
264	North Carolina Hospital Association	Inpatient	Dollar amount	Charges (average)	2012	Hospital	2	1	0	0	2	5
90	State of Vermont	Inpatient, outpatient	Dollar amount	Charges (average)	2011	Hospital	2	2	0	0	1	5
183	State of California	Inpatient, outpatient	Dollar amount	Prices (average)	2013	Hospital	2	1	0	0	1	4
162	New Jersey Health Care Quality Institute	Inpatient	Dollar amount	Charges (average)	2009	Hospital and state	1	2	0	0	1	4
155	North Dakota Department of Health	Nursing facility	Dollar amount	Daily rates (average)	2011	Facility	1	2	0	1	0	4

#= website identification; P= Price transparency R= Real comparisons; I= Information on Value; C= Connect to Care; E= Ease of Use